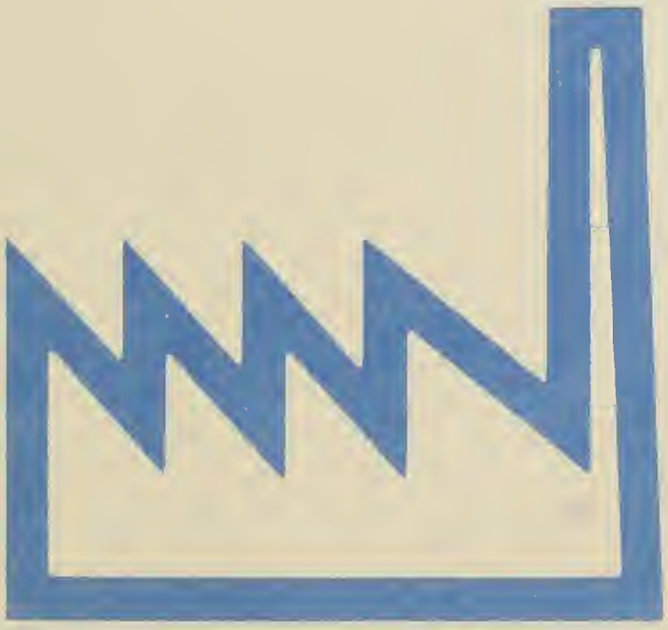
1982 Census of Manufactures

MC82-I-28H

INDUSTRY SERIES

Miscellaneous Chemical Products

Industries 2891, 2892, 2893, 2895, and 2899



U.S. Department of Commerce
BUREAU OF THE CENSUS

The publications
from the 1982 Economic and
Agriculture Censuses are dedicated
to the memory of Shirley Kallek,
Associate Director for Economic Fields.
During her career at the Bureau of the
Census (1955 to 1983), she continually
directed efforts to improve
the timeliness and accuracy of
economic statistics.

1982
Census of Manufactures

MC82-I-28H

INDUSTRY SERIES

Miscellaneous Chemical Products

2891 Adhesives and Sealants
2892 Explosives
2893 Printing Ink
2895 Carbon Black
2899 Chemical Preparations, N.E.C.

Issued December 1984

U.S. Department of Commerce
Malcolm Baldrige, Secretary
Clarence J. Brown, Deputy Secretary
Sidney Jones, Under Secretary for Economic Affairs

BUREAU OF THE CENSUS
John G. Keane,
Director

BUREAU OF THE CENSUS
John G. Keane, Director
C. L. Kincannon, Deputy Director

Charles A. Waite, Associate Director for Economic Fields
John H. Berry, Assistant Director for Economic and Agriculture Censuses

INDUSTRY DIVISION
Gaylord E. Worden, Chief

ACKNOWLEDGMENTS—Meny persons perticipeted in the verious activities of the 1982 Census of Menufectures. Primery direction of the progrem wes performed by **Shirley Kallek**, Associate Director for Economic Fields (until May 1983), **Charles A. Waite**, her successor, and **Michael G. Ferrell**, Assistant Director for Economic end Agriculture Censuses (until August 1984), and **John H. Berry**, his successor.

This report was prepered in the Industry Division under the generel direction of **Roger H. Bugenhagen**, Chief (until April 1983), end **Gaylord E. Worden**, his successor. **John P. Govoni**, Assistent Chief for Census/Annual Survey of Menufectures (ASM) Progrems, wes responsible for the overell menegement of the census of menufectures. He guided the plenning end implementetion of the project end coordinated ectivities with other divisions.

Progrem responsibility was shered by the following individuels who participated importantly in the entire progrem: **John P. McNamee**, Chief, Minerals Brench; **Dale W. Gordon**, Chief, Census/ASM Durables Branch; **Michael J. Zampogna**, Chief, Census/ASM Nondurebles Brench; **Bernerd J. Fitzpatrick**, Chief, Census Special Reports 8rench (until April 1983); and **Bruce M. Goldhirsch**, his successor; **Kenneth I. Hansen**, Chief, Annual Survey of Menufectures Brench; **Malcolm E. Bernhardt**, Chief, Current Durables Branch; end **Carole A. Ambler**, Chief, Current Nondurebles Brench.

Allen H. Foreman, Jr.,Chief, Forest Products,Printing and Publishing, and Chemicals Section, assisted by **Mark Schmidt**, was directly responsible for the analysis of the data and preparation of this report.

Dr. Edward A. Robinson, Senior Industry Stetistician, made significent contributions to the besic economic concepts end content of the census. The computer processing systems were developed end coordinated under the direction of **William E. Norfolk**, Assistent Chief for Operetions. **Serah A. Mathis**, Chief, Census Programming Brench, wes responsible for implementation of the computer systems, end the computer progrems were prepered under the supervision of **David Onions** and **Gerald S. Turnage**, assisted by **Barbara A. Lambert**. The methematical techniques and quality control requirements were developed by **Preston J. Waite**, Assistant Chief for Reserch end Methodology, essisted by **Stacey Cole, Pamala McKee, Amelia M. Peregoy, Magdalena Ramos**, and **Ann M. Stephens**.

Industry classificetion wes controlled by **Bruce M. Goldhirsch**; coordinetion ectivities with Dete Preperetion Division were carried out by **Eric Taylor**; and the verious pheses of the publicetion process were coordineted by **Lillie Mae Skinner**. Other persons made important contributions in such arees es developing specifications, procedures, and resolving problems. They include **Richard J. Sterner, Robert A. Rosati, Richard Sweeney, Cyr F. Linonis, Leonard Pomeroy, Patricia L. Horning**, end **Dennis L. Wagnar**.

Systems and procedures for meilout, receipt, correspondence, dete input, Industry classificetion, other clericel processing, edministretive record processing, end quality control, elong with the associeted electronic computer programs, were developed in the Economic Surveys Division, **W. Joel Richardson**, Chief.

Planning, design, review, and composition of report forms were performed in the Administrative Services Division, **Robert L. Kirkland**, Chief.

Publication planning, design, editoriel review, composition, end printing procurement were performed in the Publications Services Division, **Reymond J. Koski**, Chief.

Geographic coding procedures end essocieted computer programs were developed in the Geogrephy Division, **Robert W. Marx**, Chief.

Meilout preperetion end receipt operetions, clericel end enelyticel review ectivities, dete keying, and geocoding review were performed in the Dete Preparetion Division, **Don L. Adams**, Chief.

Computer processing wes performed in the Computer Services Division, **C. Thomas DiNenno**, Chief (until February 1984), end **John E. Halterman**, his successor.

Photocomposition programs for the stetisticel tebles were developed in the Systems Support Division, **Larry J. Patin**, Chief (until October 1983), end **Arnold E. Levin**, his successor.

Speciel-purpose computer programs for disclosure analysis were developed in the 8usiness Division **Gerald F. Cranford**, Chief (until December 1983), end **Howard N. Hamilton**, his successor.

The overall planning and review of the census operetions were performed by the steff of the office of the Assistant Director for Economic and Agriculture Censuses.

Special acknowledgment is also due the many businesses whose cooperetion hes contributed to the publicetion of these data.

Library of Congress Cataloging in Publication Data

Census of manufactures (1982)
1982 census of manufactures.

Contents: [1] Geographic aree series — [2] Industry series.
Supt. of Docs. no.: C 3.24/8: MC82-I
1. United Stetes—Menufactures—Statistics.
I. United Stetes. 8ureau of the Census. II. Title.
HD9724.C4 1984 338.4'767'0973 83-600153

For sale by Superintendent of Documents, U.S. Government Printing Office, Weshington, D.C. 20402.

If you have any questions concerning the statistics in this report, cell (301) 763-2510.

INTRODUCTION

ECONOMIC CENSUSES OVER TIME

The early beginnings of America's industrial output were first measured in the United States in the 1810 Decennial Census and again in 1820, when questions on manufacturing were included with those for population. Beginning with the 1840 Decennial Census, there were enumerations of manufactures and mineral industries at 10-year intervals up to and including the year 1900 for manufactures and 1940 for mineral industries. The latter census was again taken for 1954, 1958, 1963, and 1967.

Because of the increasing dominance of manufacturing in the early 20th century, Congress directed that quinquennial censuses of manufactures be taken beginning in 1905. However, from 1919 through 1939, these censuses were conducted every 2 years. The need for war-related current surveys in the early 1940's postponed the next census of manufactures until 1948 (for 1947). That census was again taken for 1954, 1958, 1963, and 1967.

Retail and wholesale trade data were first collected in 1930, and in 1933 information on selected service industries was added to the data-collection operation. These business censuses, as they were called, were again taken for 1935, 1939 (as part of the 1940 decennial program), 1948, 1954, 1958, 1963, and 1967.

Information on construction industries was obtained first in 1930 and again for 1935 and 1939. Data for the full spectrum of construction industries were not gathered again until 1968 (for 1967).

The need for transportation data to supplement information available from existing governmental or private sources was recognized by Congress in the late 1950's and early 1960's. The census of transportation (consisting of several surveys) was taken first for 1963 and again for 1967.

Since 1967, all of the above censuses have been taken quinquennially as part of the Census Bureau's economic census program. (For the 1977 censuses, the coverage of the service industries was broadened from "selected services" to "all services, except religious organizations and private households." A total of 41 additional four-digit standard industrial classifications[1] (SIC's) in 7 SIC major groups was added to the scope of the census. While most of the industries included for the first time for 1977 were covered again for 1982, some were not, i.e., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions and similar labor organizations; and political organizations.)

The first manufacturing census for an outlying area was conducted in Puerto Rico for the year 1909. Thereafter, with the exception of 1929, a census was taken at 10-year intervals through 1949. The first censuses of retail trade, wholesale trade, and selected service industries in Puerto Rico were conducted for 1939. These censuses also were taken for the years 1949, 1954, 1958, 1963, and 1967. A census of construction industries was introduced first in Puerto Rico for 1967. These censuses of Puerto Rico have been taken since then for the years 1972, 1977, and 1982.

Censuses of manufactures, retail trade, wholesale trade, and selected service industries were conducted in Guam and the Virgin Islands of the United States for 1958, 1963, 1967, 1972, 1977, and 1982. Censuses of mineral industries were taken in the Virgin Islands of the United States for the years 1958, 1963, and 1967 but not since that time. A census of construction industries was also undertaken in these areas for 1972, 1977, and 1982.

Retail trade, wholesale trade, selected service industries, manufacturing, and construction industries were canvassed for the first time in the Northern Mariana Islands in 1983 (for 1982).

For 1982, the economic censuses and agriculture censuses were conducted concurrently.

USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source for facts about the structure and functioning of the Nation's economy and provide essential information for government, business, industry, and the general public. They provide an important part of the framework for such composite measures as the gross national product, input-output measures, indexes of industrial production, and indexes measuring productivity and price levels. Information from the censuses is used to establish sampling frames and as benchmarks for current surveys of business activity, which are essential for measuring short-term economic conditions.

State and local governments use census data to assess business activities within their jurisdictions. The private sector uses the data to forecast general economic conditions; analyze sales performance; lay out sales territories; allocate funds for advertising; decide on locations for new plants, warehouses, or stores; and measure potential markets in terms of size, geographic areas, kinds of business, and kinds of products made or sold.

Following every census, thousands of businesses and other users purchase reports. Likewise, census facts are disseminated widely by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. All 1982 data are available on microfiche from the U.S. Government Printing Office and most data on computer tape from the Census Bureau. Finally, the more than 50 State Data Centers also are suppliers of economic census statistics.

AUTHORITY AND SCOPE OF THE ECONOMIC CENSUSES

The economic censuses are required by law under title 13 of the United States Code, sections 131, 191, and 224, which directs that they be taken at 5-year intervals for the years ending in 2 and 7. The 1982 Economic Censuses covered manufacturing, mining, construction industries, retail trade, wholesale trade, service industries, and selected transportation activities. Special programs also cover minority-owned and women-owned businesses. The next economic censuses are scheduled to be taken in 1988 for the year 1987.

---

[1]**Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-00500176-0.

CENSUS OF MANUFACTURES

General

The 1982 Census of Manufactures is the 31st census of manufactures of the United States. For 1982, it was conducted jointly with the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses.

This report, from the 1982 Census of Manufactures, is one of a series of 82 industry reports, each of which provides statistics for groups of related industries. Additional separate reports will be issued for each State and on special subjects, such as size of establishments, legal form of organization, and fuels and electric energy consumed.

These separate reports will subsequently be issued as portions of the final census volumes. Volume I, Subject Statistics, will show comparative statistics for industries, States, and standard metropolitan statistical areas. It also will show selected subjects, such as concentration ratios in manufacturing, selected materials consumed, manufacturing activity in government establishments, and water use in manufacturing. Volume II, Industry Statistics, will be a consolidation of reports for the 82 groups of industries showing the same information that is shown in this report. Volume III, Geographic Area Statistics, will contain establishment-based data (number of establishments, employment, payroll, value added by manufacture, and capital expenditures) for each State and its important standard metropolitan statistical areas, counties, and places, by industry groups and important individual industries. Totals for "all manufacturing" will be shown for counties and places with more than 450 manufacturing employees. The introduction to the final volumes will discuss, at greater length, many of the subjects described in this introduction. For example, the volume text will discuss the relationship of value added by manufacture to National income by industry of origin, the changes in statistical concepts over the history of the censuses, and the valuation problems arising from intracompany transfers between manufacturing plants of a company and between manufacturing plants and sales offices and sales branches of a company.

Scope of Census and Definition of Manufacturing Industries

The 1982 Census of Manufactures covers all establishments employing one person or more primarily engaged in manufacturing as defined in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 Supplement.[1] This is the system of industrial classification developed over a period of years by experts on classification in government and private industry under the guidance of the Office of Management and Budget. This system of classification is in general use among government agencies as well as organizations outside the government.

The SIC manual defines manufacturing as the mechanical or chemical transformation of inorganic or organic substances into new products. The assembly of component parts of products is also considered to be manufacturing if the resulting product is neither a structure nor other fixed improvement. These activities are usually carried on in plants, factories, or mills that characteristically use power-driven machines and materials handling equipment.

[1]**Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-00500176-0.

Manufacturing production is usually carried on for the wholesale market, for transfers to other plants of the same company, or to the order of industrial users rather than for direct sale to the household consumer. Some manufacturers in a few industries sell chiefly at retail to household consumers through the mail, through house-to-house routes, or through salespersons. Some activities of a service nature (enameling, engraving, etc.) are included in manufacturing when they are performed primarily for the trade. They are considered nonmanufacturing when they are performed primarily to the order of the household consumer.

Relationship Between Annual Survey of Manufactures and Census of Manufactures

The Bureau of the Census conducts the annual survey of manufactures (ASM) in each of the 4 years between the censuses of manufactures. The ASM is based on a scientifically selected sample of approximately 55,000 establishments and collects the same industry statistics (employment, payroll, value of shipments, etc.) as the census of manufactures. In addition to collecting the information normally requested on the census form, the establishments in the ASM sample are requested to supply detailed information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services.

Establishment Basis of Reporting

The census of manufactures and the annual survey of manufactures are conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1982, as in earlier years, a minimum size limit was set for including establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than $5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company (see Auxiliaries).

Manufacturing Universe and Census Report Forms

The 1982 Census of Manufactures universe includes approximately 345,000 establishments. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures. The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in this publication are described below.

1. Small Single-Unit Companies Not Sent a Report Form

In the 1982 Census of Manufactures, approximately 140,000 small single-establishment companies were excused from filing reports. Selection of these small

establishments was done on an industry-by-industry basis and was based on annual payroll and total shipments data as well as on the industry classification codes contained in the administrative records of other Federal agencies. The cutoffs were selected so that these administrative records cases would account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed report forms.

Information on the physical location of the establishment, as well as information on payrolls, receipts (shipments), and industry classification, was obtained from the administrative records of other Federal agencies under special arrangements, which safeguarded their confidentiality. Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative records files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative record cases were given only a two- or three-digit SIC group. For the 1982 Census of Manufactures, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments Sent a Report Form

The 205,000 establishments covered in the mail canvass were divided into three groups:

a. **ASM sample establishments**—This group consisted of approximately 55,000 establishments covering all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size (see appendix, Annual Survey of Manufactures).

In a census of manufactures year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. Results of the ASM inquiries are included in tables 3c and 3d of this report.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the approximately 450 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries, as well as secondary products and miscellaneous services that establishments classified in these industries were likely to be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of cases, the quantity of the product shipped during the survey year. Space was also provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

Finally, a wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. **Large and medium establishments (non-ASM)**—Approximately 100,000 establishments were included in this group. A variable cutoff, based on administrative records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. **Small single-unit establishments (non-ASM)**—This group consisted of approximately 50,000 establishments. For those industries where application of the variable cutoff for administrative records cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or "short" form was used. These establishments received one of the approximately 80 versions of the short form, which requested summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics; the same

data were collected on the short as well as the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the values of the n.s.k. categories.

Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the paperbound geographic area series, the bound volumes of the census of manufactures, and in a report issued as part of the 1982 Enterprise Statistics survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two or more establishments. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting, tax accounting, company sales and profit reports, and personnel accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

Industry Classification of Establishments

Each of the establishments covered in the census was classified in one of approximately 450 manufacturing industries in accordance with the industry definitions in the SIC system. Under this system of classification, an industry is generally defined as a group of establishments producing a single product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of plants must be significant in terms of its number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively became narrower with successive additions of numerical digits. There are 20 major groups (two-digit SIC), 143 industry groups (three-digit SIC), and approximately 450 industries (four-digit SIC). The product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 1,500 classes of products, identified by a five-digit code, and about 11,000 products, identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in making those products. For example, establishments engaged in blast furnace operations, refining of nonferrous metals from ore, or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or the change has occurred for two successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year (see appendix, Annual Survey of Manufactures). However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC level, should be viewed with caution. This is true particularly for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in tables 6a through 6c represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the

composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios, which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfer of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

Value of Shipments for the Industry Compared With Value of Product Shipments

This industry report shows value of shipments data for industries and products. In tables 1a through 5a, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Product shipments shown in table 6a represent the total value of shipments of products classified as primary to an industry that were shipped by all manufacturing establishments regardless of their industry classification.

CENSUS DISCLOSURE RULES

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this item may be given even though other information is withheld.

The disclosure analysis for the industry statistics in tables 1a through 5a of this report is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line has been suppressed. However, the suppressed data are included in higher level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

MICROFICHE AND COMPUTER TAPES

All the data in this report are available on microfiche. Selected data are also available on computer tape.

In addition to selected published data being on computer tape, one major data series, the location of manufacturing plants, will be available only on computer tape. This series presents the number of establishments by employment size class by four-digit SIC industry codes for States, counties, and places of 2,500 inhabitants or more. These data are available for both State and county by industry, and State and place by industry.

Microfiche reports are sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Computer tapes are sold by the Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

SPECIAL TABULATIONS

Special tabulations of data collected in the 1982 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief, Industry Division, Bureau of the Census, Washington, D.C. 20233.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

Users' Guide for Locating Statistics

[For explanation of terms, see appendixes]

	Item	Four-digit industry statistics		
		Historical	Operating ratios	By geographic area
1	Number of companies	1a		
2	Number of manufacturing establishments	1a		2
	Employment and payroll:			
3	Number of employees	1a	1b	2
4	Payroll	1a	1b	2
5	Supplemental labor costs			
6	Production workers	1a	1b	2
7	Production-worker hours	1a	1b	2
8	Production-worker wages	1a	1b	2
	Shipments, cost of materials, and value added:			
9	Value of shipments (four-digit)	1a	1b	2
10	Product class shipments (five-digit)			
11	Product shipments (seven-digit)			
12	Value added by manufacture	1a	1b	2
13	Cost of materials	1a	1b	2
14	Fuels and electric energy			
15	Materials consumed by kind			
	Inventories:			
16	Total, end of year	1a		
17	By method of valuation			
18	By stage of fabrication			
	Capital expenditures, assets, rental payments, and purchased services:			
19	New capital expenditures	1a		2
20	Used plant and equipment expenditures			
21	Gross assets			
22	Depreciation			
23	Retirements of buildings and machinery			
24	Rental payments			
25	Purchased services			
	Ratios:			
26	Specialization	1a		
27	Coverage	1a		

*Number of companies with shipments of over $100 thousand.
**Detailed information shown.

in This Report by Table Number

Four-digit industry statistics—Con.				Five-digit product class and seven-digit product statistics				
Summary and supplemental	By employment size	By industry and product class specialization	Materials consumed by kind	Industry-product analysis	Product shipments	Product class by geographic area	Historical product class	
3a					*6a			1
**3a	4	5a						2
3a	4	5a						3
3a	4	5a						4
**3d								5
**3a	4	5a						6
**3a	4	5a						7
3a	4	5a						8
3a	4	5a		5b, 5c				9
				5b, 5c	6a	6b	6c	10
					6a			11
3a	4	5a						12
**3a	4	5a						13
3a, 3d								14
			7					15
3b, 3c	4							16
3b, 3c								17
3b								18
**3a, **3d	4	5a						19
**3a, **3d								20
**3d								21
**3d								22
**3d								23
**3d								24
**3d								25
3a				5b				26
3a				5b				27

Miscellaneous Chemical Products

CONTENTS

[Page numbers listed here omit the prefix that appears as part of the number of each page]

DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

MISCELLANEOUS CHEMICAL PRODUCTS

This report shows 1982 Census of Manufactures statistics for establishments classified in each of the following industries:

SIC Code and Title

2891 Adhesives and Sealants
2892 Explosives
2893 Printing Ink
2895 Carbon Black
2899 Chemical Preparations, N.E.C.

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1a-5a) with product statistics (table 6a) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other government agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions contained in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 supplement.[1]

INDUSTRY 2891, ADHESIVES AND SEALANTS

This industry comprises establishments primarily engaged in the manufacture of industrial and household adhesives, glues, caulking compounds, sealants, and cements produced from vegetable, animal, and synthetic materials. Establishments primarily engaged in the manufacture of plastics and resin materials, including resins for protective coatings, are classified in Industry 2821, Plastics Materials and Resins. Establishments primarily engaged in the manufacture of putties, wood fillers, and sealers are classified in Industry 2851, Paints and Allied Products.

In the 1982 Census of Manufactures, Industry 2891, Adhesives and Sealants, recorded employment of 18.2 thousand. The total value of shipments for establishments classified in this industry was $2.9 billion.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 10 percent above the 16.6 thousand reported in 1977. The leading States in employment in 1982 were California, Ohio, New Jersey, and Illinois, accounting for approximately 43 percent of the industry's 1982 employment. These same States were the leaders in 1977, when they accounted for approximately 45 percent of the industry's employment, although there has been some shift in the relative importance of individual States.

Compared with 1981, employment increased 7 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 2891 shipped $2.5 billion of products primary to the industry, $285 million of secondary products, and had $122 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1977, this specialization ratio was 89 percent.

Establishments in this industry also accounted for 84 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 81 percent. The products primary to industry 2891, no matter in what industry they were produced, appear in table 6a and aggregate to $2.9 billion in current prices.

The total cost of materials and services used by establishments classified in the adhesives and sealants industry amounted to $1.7 billion in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of agencies or developed from industry averages. These establishments accounted for 10 percent of total value of shipments.

[1]**Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-005-00176-0.

INDUSTRY 2892, EXPLOSIVES

This industry comprises establishments primarily engaged in the manufacture of high explosives, blasting accessories, and related products. Establishments primarily engaged in the manufacture of ammunition are classified in Industries 3482, Small Arms Ammunition, and 3483, Ammunition, Except for Small Arms, N.E.C. Establishments primarily engaged in the manufacture of fireworks are classified in Industry 2899, Chemical Preparations, N.E.C.

Statistics for the explosives industry include selected data reported by government-owned, contractor-operated (GOCO) establishments. Data for all materials consumed except fuels and electric energy, as well as data for fixed assets, capital expenditures, and inventories are excluded from this report for the GOCO plants; value of shipments and value added by manufacture have been estimated from averages reported for commercial establishments in prior years. These establishments represent 42 percent of the industry's employment in 1982, compared with 34 percent in 1977.

In the 1982 Census of Manufactures, Industry 2892, Explosives, recorded employment of 12.3 thousand. The total value of shipments for establishments classified in this industry was $923 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was the same as the 12.3 thousand reported in 1977. The leading States in employment in 1982 were Virginia, Tennessee, Pennsylvania, and New Jersey, accounting for approximately 50 percent of the industry's 1982 employment. Data for Virginia, Tennessee, and New Jersey have been withheld to avoid disclosing data for individual companies. These same States were the leaders in 1977, when they accounted for approximately 55 percent of the industry's employment.

Compared with 1981, employment increased 3 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 2892 shipped $565 million of products primary to the industry, $58 million of secondary products, and had $300 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 91 percent (specialization ratio). In 1977, this specialization ratio also was 86 percent.

Establishments in this industry also accounted for 96 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was shown as a minimum percentage of 95 percent; the exact percentage was withheld to avoid disclosing data for individual companies. The products primary to industry 2892, no matter in what industry they were produced, appear in table 6a and aggregate to $588 million in current prices.

The total cost of materials and services used by establishments classified in the explosives industry amounted to 341 million in current prices. Data on specific materials consumed appear in table 7.

The total cost of materials and services used by establishments classified in the explosives industry amounted to $341 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 6 percent of total value of shipments.

INDUSTRY 2893, PRINTING INK

This industry comprises establishments primarily engaged in the manufacture of lithographic, letterpress, gravure, flexographic, screen process, and similar printing inks. Establishments primarily engaged in the manufacture of writing, stamp pad, and related inks, and household tints and dyes are classified in Industry 2899, Miscellaneous Chemical Preparations, N.E.C.

In the 1982 Census of Manufactures, Industry 2893, Printing Ink, recorded employment of 9.9 thousand. The total value of shipments for establishments classified in this industry was $1.6 billion.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 2 percent below the 10.1 thousand reported in 1977. The leading States in employment in 1982 were Illinois, New Jersey, California, and Ohio, accounting for approximately 50 percent of the industry's 1982 employment. Data for Illinois, New Jersey, and Ohio have been withheld to avoid disclosing data for individual companies. These same States were the leaders in 1977, when they accounted for approximately 55 percent of the industry's employment.

Compared with 1981, employment did not change. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 2893 shipped $1.5 billion of products primary to the industry, $33 million of secondary products, and had $63 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 98 percent (specialization ratio). In 1977, this specialization ratio was 97 percent.

Establishments in this industry also accounted for 97 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio also was 97 percent. The products primary to

industry 2893, no matter in what industry they were produced, appear in table 6a and aggregate to 1.5 billion in current prices.

The total cost of materials and services used by establishments classified in the printing ink industry amounted to $1.0 billion in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 13 percent of total value of shipments.

INDUSTRY 2895, CARBON BLACK

This industry comprises establishments primarily engaged in the manufacture of carbon black by the furnace and channel processes. Establishments primarily engaged in the manufacture of lamp black and bone black are classified in Industry 2816, Inorganic Pigments.

In the 1982 Census of Manufactures, Industry 2895, Carbon Black, recorded employment of 2.1 thousand. The total value of shipments for establishments classified in this industry was $633 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 16 percent below the 2.5 thousand reported in 1977. The leading States in employment in 1982 were Texas and Louisiana, accounting for approximately 81 percent of the industry's 1982 employment. These same States were the leaders in 1977, when they accounted for approximately 80 percent of the industry's employment.

Compared with 1981, employment decreased 9 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total cost of materials and services used by establishments classified in the carbon black industry amounted to $434 million in current prices. Data on specific materials consumed appear in table 7.

No establishments in this industry were excluded from the mail portion of the census. There were no establishments for which administrative records were used.

INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.

This industry comprises establishments primarily engaged in the manufacture of miscellaneous chemical preparations, not elsewhere classified, such as salt evaporated from seawater or brine, fatty acids, essential oils, gelatin (except vegetable), sizes, bluing, laundry sours, writing and stamp pad inks; and industrial compounds, such as boiler and heat insulating compounds, metal, oil and water treating compounds, waterproofing compounds, and chemical supplies for foundries. Establishments primarily engaged in the manufacture of vegetable gelatin (agar-agar) are classified in industry 2833, and dessert preparations based on gelatin in industry 2099. Establishments primarily engaged in mining, crushing, and screening rock salt are classified in industry 1476, and establishments primarily engaged in extracting brine in industry 1479.

In the 1982 Census of Manufactures, Industry 2899, Chemical Preparations, N.E.C., recorded employment of 39.6 thousand. The total value of shipments for establishments classified in this industry was $6.3 billion.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 12 percent above the 35.3 thousand reported in 1977. The leading States in employment in 1982 were Ohio, California, Texas, and Illinois, accounting for approximately 37 percent of the industry's 1982 employment. This represents a shift from 1977 when Ohio, New Jersey, Texas, and Illinois accounted for approximately 40 percent of the industry's employment.

Compared with 1981, employment increased 12 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 2899 shipped $5.1 billion of products primary to the industry, $908 million of secondary products, and had $277 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 85 percent (specialization ratio). In 1977, this specialization ratio was 87 percent.

Establishments in this industry also accounted for 84 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 77 percent. The products primary to industry 2899, no matter in what industry they were produced, appear in table 6a and aggregate to $6.1 billion in current prices.

The total cost of materials and services used by establishments classified in the chemical preparations, n.e.c., industry amounted to $3.4 billion in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 14 percent of total value of shipments.

Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year[1]	Companies[2] (no.)	All establishments[3] Total (no.)	All establishments[3] With 20 employees or more (no.)	All employees Number (1,000)	All employees Payroll (million dollars)	Production workers Number (1,000)	Production workers Hours (millions)	Production workers Wages (million dollars)	Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories[4] (million dollars)	Ratios Specialization (percent)	Ratios Coverage (percent)
INDUSTRY 2891, ADHESIVES AND SEALANTS[5]															
1982 Census	517	683	233	18.2	365.5	10.9	20.7	173.0	1 150.2	1 699.9	2 856.7	72.4	362.5	90	84
1981 ASM[6]	(NA)	(NA)	(NA)	17.0	310.6	10.3	20.0	146.8	1 188.4	1 545.9	2 707.8	73.7	314.1	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	16.8	279.1	9.5	19.1	128.0	1 046.1	1 325.3	2 353.9	[7]78.1	263.9	(NA)	(NA)
1979 ASM[6]	(NA)	(NA)	(NA)	17.8	292.7	10.1	20.1	122.9	1 043.2	1 313.1	2 340.2	62.9	238.4	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	16.8	249.4	10.2	20.3	119.0	865.4	1 132.1	1 980.1	54.4	221.8	(NA)	(NA)
1977 Census	403	572	212	16.6	230.2	10.2	20.5	113.5	748.8	1 067.1	1 808.1	38.9	201.8	89	81
1976 ASM	(NA)	(NA)	(NA)	14.3	190.9	8.3	16.8	85.0	637.9	891.5	1 516.1	27.2	173.3	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	15.1	192.8	8.2	15.9	78.4	595.7	820.1	1 404.5	43.2	177.3	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	15.7	182.1	9.0	17.8	80.0	610.0	781.4	1 369.3	44.7	174.0	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	16.2	173.3	9.4	19.4	82.6	520.4	621.1	1 137.0	36.6	127.6	(NA)	(NA)
1972 Census	316	463	187	14.9	148.2	8.5	17.6	68.8	426.6	504.0	928.0	24.9	101.9	89	82
INDUSTRY 2892, EXPLOSIVES															
1982 Census	73	114	45	12.3	253.3	7.9	15.1	144.1	580.7	340.8	922.7	32.9	101.1	91	96
1981 ASM	(NA)	(NA)	(NA)	12.0	223.8	7.9	15.5	131.8	589.9	406.6	995.0	30.7	78.5	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	12.5	221.3	8.9	18.1	139.8	574.0	354.4	927.0	39.3	69.2	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	11.2	178.4	7.9	15.2	107.4	480.3	347.1	819.7	24.5	72.8	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	11.8	179.3	8.0	15.3	106.9	433.7	271.6	696.5	25.2	71.0	(NA)	(NA)
1977 Census	62	97	53	12.3	173.2	8.4	16.1	101.4	410.7	258.3	666.3	26.1	59.8	86	[8]95
1976 ASM	(NA)	(NA)	(NA)	11.8	157.1	7.8	14.6	90.3	370.4	228.0	602.6	17.5	52.7	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	14.2	170.5	9.7	18.2	102.8	360.9	231.4	613.0	22.4	57.9	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	15.7	167.9	11.4	21.3	108.2	374.8	177.8	548.2	20.6	47.8	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	16.5	165.3	11.6	22.5	104.3	301.9	125.1	429.4	12.5	39.7	(NA)	(NA)
1972 Census	55	92	50	18.6	178.9	13.3	25.8	115.6	281.7	121.3	402.7	30.1	38.1	92	[8]95
1971 ASM	(NA)	(NA)	(NA)	19.5	179.5	13.4	27.3	113.7	238.0	180.3	424.3	10.9	57.7	(NA)	(NA)
1970 ASM	(NA)	(NA)	(NA)	25.2	216.4	17.4	35.5	138.1	275.8	196.7	503.9	17.4	40.4	(NA)	(NA)
1969 ASM	(NA)	(NA)	(NA)	34.7	273.1	25.1	50.4	183.5	392.9	318.2	694.2	19.6	86.8	(NA)	(NA)
1968 ASM	(NA)	(NA)	(NA)	35.8	255.8	26.6	53.4	177.3	398.0	300.9	699.5	27.6	41.1	(NA)	(NA)
1967 Census	37	92	52	32.8	227.0	24.1	47.9	156.3	376.0	270.7	647.0	21.8	39.1	92	93
INDUSTRY 2893, PRINTING INK															
1982 Census	228	467	153	9.9	214.1	5.5	11.0	101.9	556.4	1 016.2	1 571.5	25.5	196.9	98	97
1981 ASM	(NA)	(NA)	(NA)	9.9	198.7	5.8	11.9	99.9	467.5	976.9	1 435.7	[7]32.9	164.5	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	9.7	179.8	5.8	11.8	90.8	448.2	846.0	1 285.8	[7]22.0	143.5	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	10.5	174.9	6.1	12.4	87.3	438.1	734.9	1 164.6	[7]20.9	142.3	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	10.5	161.2	6.0	11.7	77.0	420.9	633.0	1 045.4	[7]21.6	127.1	(NA)	(NA)
1977 Census	205	446	157	10.1	145.1	5.8	11.4	71.6	367.8	583.5	944.9	17.0	116.7	97	97
1976 ASM	(NA)	(NA)	(NA)	9.0	128.7	5.0	10.0	62.7	342.6	436.4	772.7	12.1	92.2	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	9.0	115.5	5.3	9.0	58.1	311.5	416.7	729.7	[7]17.9	92.3	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	8.8	100.8	5.4	10.5	53.3	283.2	364.4	640.1	14.0	95.0	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	9.8	105.3	6.1	12.1	55.4	240.7	311.9	550.5	7.4	76.1	(NA)	(NA)
1972 Census	213	407	145	9.6	99.3	5.8	12.1	49.8	232.0	281.7	508.4	12.6	67.9	95	93
1971 ASM	(NA)	(NA)	(NA)	8.2	75.6	5.1	10.4	39.2	173.9	229.2	401.6	12.4	55.7	(NA)	(NA)
1970 ASM	(NA)	(NA)	(NA)	9.1	76.1	5.7	11.7	39.9	172.4	226.1	399.8	12.2	52.3	(NA)	(NA)
1969 ASM	(NA)	(NA)	(NA)	10.8	91.1	6.5	13.4	51.0	191.1	259.6	448.1	15.1	59.8	(NA)	(NA)
1968 ASM	(NA)	(NA)	(NA)	10.4	85.5	6.4	13.5	46.6	186.6	231.4	414.8	9.3	51.8	(NA)	(NA)
1967 Census	207	360	124	9.7	74.0	6.4	13.6	41.1	166.6	211.9	375.6	7.1	44.7	93	95
INDUSTRY 2895, CARBON BLACK															
1982 Census	8	25	24	2.1	54.9	1.6	3.0	39.1	190.8	433.7	632.9	39.4	80.4	100	[8]95
1981 ASM	(NA)	(NA)	(NA)	2.3	54.9	1.7	3.4	39.5	202.1	528.6	721.1	54.7	51.2	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	2.3	52.5	1.7	3.6	37.7	131.9	363.7	498.0	27.7	45.9	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	2.4	49.7	1.9	4.3	37.6	186.8	367.9	547.3	[7]42.2	42.0	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	2.4	44.8	1.9	4.2	33.8	171.8	313.8	490.4	27.7	27.6	(NA)	(NA)
1977 Census	8	31	31	2.5	42.5	2.0	4.6	32.5	170.2	303.9	468.4	22.7	32.7	100	[8]95
1976 ASM	(NA)	(NA)	(NA)	2.4	38.4	1.9	4.4	29.1	133.3	231.7	367.0	19.5	28.3	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	2.3	32.7	1.8	4.0	24.2	99.9	204.9	306.5	30.5	29.0	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	2.9	35.2	2.3	5.1	27.1	141.0	201.4	330.0	16.6	37.5	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	2.9	33.0	2.3	5.0	25.4	133.6	106.1	239.5	14.2	19.2	(NA)	(NA)
1972 Census	11	37	33	2.9	31.9	2.3	5.1	24.1	137.6	88.9	227.0	11.8	18.1	100	[8]95
1971 ASM	(NA)	(NA)	(NA)	3.2	31.8	2.6	5.2	23.3	137.9	85.8	223.4	17.8	21.8	(NA)	(NA)
1970 ASM	(NA)	(NA)	(NA)	3.3	31.0	2.5	5.4	22.7	128.8	85.2	215.5	20.5	19.9	(NA)	(NA)
1969 ASM	(NA)	(NA)	(NA)	2.9	26.5	2.3	5.2	20.3	125.5	75.0	201.2	15.8	15.1	(NA)	(NA)
1968 ASM	(NA)	(NA)	(NA)	2.8	23.8	2.3	5.0	18.5	125.9	72.7	199.1	27.0	15.4	(NA)	(NA)
1967 Census	11	34	29	2.8	22.8	2.3	5.2	18.0	100.8	67.4	167.8	23.4	16.5	100	(D)
INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.[5]															
1982 Census	1 242	1 439	409	39.6	834.2	23.0	46.6	428.7	2 942.9	3 350.8	6 329.5	350.4	871.6	85	84
1981 ASM	(NA)	(NA)	(NA)	35.4	679.5	21.6	43.5	362.9	3 025.6	3 439.0	6 411.7	305.1	704.6	(NA)	(NA)
1980 ASM	(NA)	(NA)	(NA)	34.7	599.8	19.7	40.7	297.1	2 470.5	3 207.3	5 653.7	231.7	618.0	(NA)	(NA)
1979 ASM	(NA)	(NA)	(NA)	36.8	613.1	23.0	46.4	327.0	2 550.1	2 898.3	5 410.9	216.4	608.3	(NA)	(NA)
1978 ASM	(NA)	(NA)	(NA)	37.5	563.8	21.6	43.5	283.5	2 183.2	2 450.9	4 571.4	167.4	557.2	(NA)	(NA)
1977 Census	1 479	1 639	384	35.3	483.4	20.7	41.5	242.0	1 841.7	2 122.5	3 950.6	182.6	456.5	87	77
1976 ASM	(NA)	(NA)	(NA)	36.6	461.1	22.0	42.3	228.5	1 634.8	1 930.4	3 545.0	244.9	477.5	(NA)	(NA)
1975 ASM	(NA)	(NA)	(NA)	34.7	407.6	20.6	39.6	196.6	1 409.2	1 616.0	3 009.2	147.4	439.7	(NA)	(NA)
1974 ASM	(NA)	(NA)	(NA)	37.7	405.0	22.7	44.2	203.0	1 489.4	1 700.1	3 127.8	97.2	436.3	(NA)	(NA)
1973 ASM	(NA)	(NA)	(NA)	35.8	382.0	22.1	44.8	184.7	1 171.6	1 301.0	2 466.5	79.5	300.5	(NA)	(NA)
1972 Census	1 485	1 606	360	37.1	356.0	22.6	43.9	176.0	1 124.7	1 086.4	2 202.3	71.3	254.7	84	75

See footnotes at end of table.

Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years—Con.

[1]In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1967, see 1967 Census of Manufactures, vol. II, table 1 of the Industry chapter.

[2]For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

[3]Includes establishments with payroll at any time during year.

[4]Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Up to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown above and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown below:

Industries	End-of-1981 inventories (million dollars)	End-of-1982 inventories (million dollars)	1982 value added by manufacture (million dollars)
Industry 2891, Adhesives and sealants	339.0	329.9	1 153.1
Industry 2892, Explosives	82.0	79.0	579.5
Industry 2893, Printing ink	173.1	167.6	556.1
Industry 2895, Carbon black	49.7	41.7	193.6
Industry 2899, Chemical preparations, n.e.c.	801.0	760.9	2 950.1

See Inventories in appendixes for explanation of the difference between end-of-1981 inventory figure shown in table and corresponding figure shown in footnote.

[5]Industry was defined or redefined for 1972 Census of Manufactures, data are available only for years shown.
[6]Data either have associated standard errors exceeding 15 percent or are not consistent with other census series and related data; thus, these estimates may be of limited reliability.
[7]Estimate for new capital expenditures has associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.
[8]Minimum percentage; exact percentage withheld to avoid disclosing data for individual companies.

Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
	INDUSTRY 2891, ADHESIVES AND SEALANTS								
1982 Census	20 082	60	1 899	8.36	60	72	63 198	32	55.57
1981 ASM	18 271	61	1 942	7.34	57	69	69 882	26	59.40
1980 ASM	16 613	57	2 011	6.70	56	68	62 268	27	54.77
1979 ASM	16 444	57	1 990	6.11	56	69	58 607	28	51.90
1978 ASM	14 845	61	1 990	5.86	57	70	51 512	29	42.63
1977 Census	13 814	61	2 020	5.51	59	72	44 832	31	36.34
1976 ASM	13 350	58	2 024	5.06	59	71	44 608	30	37.97
1975 ASM	12 768	54	1 939	4.93	58	72	39 450	32	37.47
1974 ASM	11 599	57	1 978	4.49	57	70	38 854	30	34.27
1973 ASM	10 698	58	2 064	4.26	55	70	32 123	33	26.82
1972 Census	9 946	57	2 071	3.91	54	70	28 631	35	24.24
	INDUSTRY 2892, EXPLOSIVES								
1982 Census	20 593	64	1 911	9.54	37	64	47 211	44	38.46
1981 ASM	18 650	66	1 962	8.50	41	63	49 158	38	38.06
1980 ASM	17 704	71	2 034	7.72	38	62	45 920	39	31.71
1979 ASM	15 929	71	1 924	7.07	42	64	42 884	37	31.60
1978 ASM	15 195	68	1 912	6.99	39	65	36 754	41	28.35
1977 Census	14 081	68	1 917	6.30	39	65	33 390	42	25.51
1976 ASM	13 314	66	1 872	6.18	38	64	31 390	42	25.37
1975 ASM	12 007	68	1 876	5.65	38	66	25 415	47	19.83
1974 ASM	10 694	73	1 868	5.08	32	63	23 873	45	17.60
1973 ASM	10 018	70	1 940	4.64	29	68	18 297	55	13.42
1972 Census	9 618	72	1 940	4.48	30	75	15 145	64	10.92
1971 ASM	9 205	69	2 037	4.16	42	85	12 205	75	8.72
1970 ASM	8 587	69	2 040	3.89	39	82	10 944	78	7.77
1969 ASM	7 870	72	2 008	3.64	46	85	11 323	70	7.80
1968 ASM	7 145	74	2 008	3.32	43	80	11 117	64	7.45
1967 Census	6 921	73	1 988	3.26	42	77	11 463	60	7.85
	INDUSTRY 2893, PRINTING INK								
1982 Census	21 626	56	2 000	9.26	65	78	56 202	38	50.58
1981 ASM	20 071	59	2 052	8.39	68	82	47 081	43	39.17
1980 ASM	18 536	60	2 034	7.69	66	80	46 206	40	37.98
1979 ASM	16 657	58	2 033	7.04	63	78	41 724	40	35.33
1978 ASM	15 352	57	1 950	6.58	61	76	40 086	38	35.97
1977 Census	14 366	57	1 966	6.28	62	77	36 416	39	32.26
1976 ASM	14 300	56	2 000	6.27	56	73	38 067	38	34.26
1975 ASM	12 833	59	1 698	6.46	57	73	34 611	37	34.61
1974 ASM	11 455	61	1 944	5.08	57	73	32 182	36	26.97
1973 ASM	10 745	62	1 984	4.58	57	76	24 561	44	19.89
1972 Census	10 344	60	2 086	4.12	55	75	24 167	43	19.17
1971 ASM	9 220	62	2 039	3.77	57	76	21 207	43	16.72
1970 ASM	8 363	63	2 053	3.41	57	76	18 945	44	14.74
1969 ASM	8 435	60	2 062	3.81	58	78	17 694	48	14.26
1968 ASM	8 221	62	2 109	3.45	56	76	17 942	46	13.82
1967 Census	7 629	66	2 125	3.02	56	76	17 175	44	12.25

See footnotes at end of table.

Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
	INDUSTRY 2895, CARBON BLACK								
1982 Census	26 143	76	1 875	13.03	69	77	90 857	29	63.60
1981 ASM	23 870	74	2 000	11.62	73	81	87 870	27	59.44
1980 ASM	22 826	74	2 118	10.47	73	84	57 348	40	36.64
1979 ASM	20 708	79	2 263	8.74	67	76	77 833	27	43.44
1978 ASM	18 667	79	2 211	8.05	64	73	71 583	26	40.90
1977 Census	17 000	80	2 300	7.07	65	74	68 080	25	37.00
1976 ASM	16 000	79	2 316	6.61	63	74	55 542	29	30.30
1975 ASM	14 217	78	2 222	6.05	67	78	43 435	33	24.97
1974 ASM	12 138	79	2 217	5.31	61	72	48 621	25	27.65
1973 ASM	11 379	79	2 174	5.08	44	58	46 069	25	26.72
1972 Census	11 000	79	2 217	4.73	39	53	47 448	23	26.98
1971 ASM	9 938	81	2 000	4.48	38	53	43 094	23	26.52
1970 ASM	9 394	76	2 160	4.20	40	54	39 030	24	23.85
1969 ASM	9 138	79	2 261	3.90	37	50	43 276	21	24.13
1968 ASM	8 500	82	2 174	3.70	37	48	44 964	19	25.18
1967 Census	8 143	82	2 261	3.46	40	54	36 000	23	19.38
	INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.								
1982 Census	21 066	58	2 026	9.20	53	66	74 316	28	63.15
1981 ASM	19 195	61	2 014	8.34	54	64	85 469	22	69.55
1980 ASM	17 285	57	2 066	7.30	57	67	71 196	24	60.70
1979 ASM	16 660	63	2 017	7.05	54	65	69 296	24	54.96
1978 ASM	15 035	58	2 014	6.52	54	66	58 219	26	50.19
1977 Census	13 694	59	2 005	5.83	54	66	52 173	26	44.38
1976 ASM	12 598	60	1 923	5.40	54	67	44 667	28	38.65
1975 ASM	11 746	59	1 922	4.96	54	67	40 611	29	35.59
1974 ASM	10 743	60	1 947	4.59	54	67	39 507	27	33.70
1973 ASM	10 670	62	2 027	4.12	53	68	32 726	33	26.15
1972 Census	9 596	61	1 942	4.01	49	65	30 315	32	25.62

Note: For qualifications of data, see footnotes on table 1a.

Table 1c. Statistics for Privately Owned and Operated Establishments: 1982 and 1977

[For meaning of abbreviations and symbols, see introductory texplanation of terms, see appendixes.]

Year	Companies (no.)	All establishments		All employees		Production workers			Value added by manufacture[1] (mil. dol.)	Cost of materials (mil. dol.)	Value of shipments (mil. dol.)	Expenditures and assets		End-of-year inventories (mil. dol.)	Ratios	
		Total (no.)	With 20 employees or more (no.)	Number (1,000)	Payroll (mil. dol.)	Number (1,000)	Hours (mil.)	Wages (mil. dol.)				New capital expenditures (mil. dol.)	Gross value of fixed assets (mil. dol.)		Specialization (percent)	Coverage (percent)
	INDUSTRY 2892, EXPLOSIVES (TOTAL)[1]															
1982 Census	73	114	45	12.3	253.3	7.9	15.1	144.1	[2]580.7	[3]340.8	[4]922.7	[5]32.9	[5]278.8	[5]101.1	[6]91	[6]96
1977 Census	62	97	53	12.3	173.2	8.4	16.1	101.4	[2]410.7	[3]258.3	[4]666.3	[5]26.1	[5]183.5	[5]59.8	[6]86	[6]95
	INDUSTRY 2892, EXPLOSIVES (PRIVATELY OWNED AND OPERATED ESTABLISHMENTS)															
1982 Census	71	109	40	7.1	145.5	4.7	8.7	84.5	326.6	318.7	646.6	32.9	278.8	101.1	91	96
1977 Census	58	92	48	7.9	109.0	5.7	11.0	68.8	278.4	244.9	520.6	26.1	183.5	59.8	86	95

[1]Includes both privately owned and operated plants and government-owned, contractor-operated plants.
[2]Data include value added for government-owned contractor-operated plants which was estimated based upon averages reported for commercial establishments in prior years.
[3]Data exclude government-owned materials furnished to government-owned, contractor-operated plants, and include fuels and electric energy purchased by or for these plants.
[4]Data include a calculated value of shipments for government-owned, contractor-operated plants, comprised of adjusted value added (estimated as described in footnote 2) plus cost of fuels and electric energy.
[5]Total excludes expenditures, inventories, and fixed assets of government-owned, contractor-operated plants.
[6]Government-owned, privately-operated establishments did not enter into calculation of "primary product specialization ratio" or "coverage ratio" as all dollar receipts for these establishments were included in "miscellaneous receipts."

Table 2. Industry Statistics for Selected States: 1982 and 1977

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area		1982											1977	
		All establishments[2]		All employees		Production workers								
	E[1]	Total (no.)	With 20 employees or more (no.)	Number[3] (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)	Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees[2] (1,000)	Value added by manufacture (million dollars)
INDUSTRY 2891, ADHESIVES AND SEALANTS														
United States	**E1**	**683**	**233**	**18.2**	**365.5**	**10.9**	**20.7**	**173.0**	**1 150.2**	**1 699.9**	**2 856.7**	**72.4**	**16.6**	**748.8**
California	E2	97	34	2.2	39.2	1.3	2.4	18.5	129.4	167.7	297.6	16.0	1.8	80.1
Connecticut	E1	12	3	.7	18.8	.3	.5	3.7	46.4	27.3	74.2	3.1	.2	26.5
Florida	E3	21	3	.2	3.5	.1	.2	1.5	6.2	17.8	23.9	2.0	(NA)	(NA)
Georgia	E1	26	13	.7	12.2	.4	.8	6.2	52.5	81.8	135.3	1.5	6	31.0
Illinois	E2	52	23	1.6	32.2	.9	1.7	13.6	105.1	160.6	265.0	(D)	1.7	69.8
Indiana	E1	14	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Kentucky	–	8	5	.6	11.6	.4	.8	6.8	47.5	98.8	150.6	(D)	.4	47.1
Maryland	E2	9	6	.6	11.8	.4	.7	7.8	41.3	35.2	76.1	(D)	.5	21.2
Massachusetts	E1	33	13	1.0	20.5	.6	1.0	8.7	50.9	74.2	125.3	3.1	1.0	37.6
Michigan	E3	37	17	1.0	20.3	.7	1.3	10.7	73.5	91.0	165.6	4.1	1.0	40.3
Minnesota	E7	11	1	.2	4.8	.2	.4	3.7	6.4	11.4	17.8	(D)	(NA)	(NA)
Missouri	–	21	9	.6	11.6	.4	.7	6.1	41.1	40.3	80.7	4.5	CC	(D)
New Hampshire	E7	5	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New Jersey	E1	58	24	1.8	35.4	1.1	2.0	19.1	124.9	175.1	301.5	4.4	1.4	69.3
New York	E1	42	8	.9	17.4	.5	1.0	7.4	58.0	75.0	134.1	2.1	1.2	54.8
North Carolina	E3	18	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	18.0
Ohio	–	48	24	2.2	45.0	1.3	2.4	19.5	119.8	176.3	294.2	4.4	2.2	82.9
Pennsylvania	E1	27	7	.5	10.1	.2	.6	4.1	41.0	57.0	97.9	2.3	.7	30.2
South Carolina	E1	6	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Tennessee	E2	15	6	.3	5.1	.2	.4	2.6	19.7	31.0	49.9	.6	.2	8.7
Texas	E2	42	9	.6	11.4	.3	.7	4.8	49.3	57.7	106.4	1.7	.5	24.6
West Virginia	–	3	1	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Wisconsin	–	17	3	.4	7.7	.3	.7	4.6	18.4	56.6	74.7	3.3	.5	14.4
INDUSTRY 2892, EXPLOSIVES														
United States	**–**	**114**	**45**	**12.3**	**253.3**	**7.9**	**15.1**	**144.1**	**580.7**	**340.8**	**922.7**	**32.9**	**12.3**	**410.7**
Alabama	–	5	3	.3	6.7	.2	.3	4.1	13.4	21.3	35.0	.6	BB	(D)
Arizona	–	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
California	–	10	6	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.7	19.8
Connecticut	–	1	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Florida	–	6	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Illinois	–	3	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Kansas	–	3	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Kentucky	–	6	2	.2	2.5	.1	.1	1.2	12.5	14.0	27.2	(D)	(NA)	(NA)
Minnesota	–	5	3	.2	3.4	.1	.2	2.0	7.2	10.9	18.3	.9	(NA)	(NA)
Missouri	–	5	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
New Jersey	–	4	2	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
New York	–	3	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Ohio	E9	5	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Pennsylvania	–	8	3	1.0	17.4	.8	1.4	11.4	28.8	30.1	59.6	2.6	1.5	36.4
Tennessee	–	3	3	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Texas	E1	8	3	.5	8.9	.3	.6	4.8	20.2	20.6	41.3	3.2	.3	15.8
Virginia	–	2	1	FF	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	FF	(D)
Wisconsin	–	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
INDUSTRY 2893, PRINTING INK														
United States	**E1**	**467**	**153**	**9.9**	**214.1**	**5.5**	**11.0**	**101.9**	**556.4**	**1 016.2**	**1 571.5**	**25.5**	**10.1**	**367.8**
California	E2	53	22	1.0	25.8	.6	1.2	12.2	53.0	93.8	147.7	5.9	1.0	37.8
District of Columbia	–	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Georgia	E2	16	8	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	11.4
Illinois	E1	47	22	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.9	69.0
Indiana	–	7	5	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	9.9
Massachusetts	E1	17	3	.2	3.6	.1	.2	1.5	7.1	16.0	23.1	.3	.2	7.8
Michigan	E2	11	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Minnesota	E2	9	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	11.5
Missouri	–	15	8	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.4	12.1
New Jersey	E2	54	20	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
New York	E2	27	7	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
North Carolina	–	16	5	.3	6.6	.2	.3	2.4	19.3	28.4	47.8	.8	.2	12.1
Ohio	–	27	13	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.0	32.0
Pennsylvania	E1	20	7	.4	9.5	.3	.5	4.4	18.6	38.7	57.3	.4	.5	14.4
Tennessee	E1	14	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Texas	–	18	8	.5	6.5	.2	.3	3.0	23.7	42.2	65.9	1.1	.3	14.2
Virginia	–	13	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Wisconsin	E2	15	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
INDUSTRY 2895, CARBON BLACK														
United States	**–**	**25**	**24**	**2.1**	**54.9**	**1.6**	**3.0**	**39.1**	**190.8**	**433.7**	**632.9**	**39.4**	**2.5**	**170.2**
Louisiana	–	5	5	.7	16.3	.6	1.1	12.5	72.3	155.5	232.2	9.3	.9	68.3
Texas	–	10	10	1.0	26.8	.7	1.3	18.9	82.3	173.9	257.3	17.4	1.1	68.4

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982												1977	
		All establishments[2]		All employees		Production workers								
	E[1]	Total (no.)	With 20 employees or more (no.)	Number[3] (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)	Value added by manufacture[4] (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees[3] (1,000)	Value added by manufacture (million dollars)
INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.														
United States	**E1**	**1 439**	**409**	**39.6**	**834.2**	**23.0**	**46.6**	**428.7**	**2 942.9**	**3 350.8**	**6 329.5**	**350.4**	**35.3**	**1 841.7**
Alabama	–	14	5	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Arizona	E2	9	4	.2	2.2	.1	.2	1.3	6.8	6.6	13.5	(D)	(NA)	(NA)
California	E1	189	47	3.8	73.0	2.2	4.3	37.9	222.3	237.5	465.4	12.1	2.6	130.1
Colorado	E5	15	2	.2	4.9	.1	.3	2.1	8.3	13.5	21.9	.8	(NA)	(NA)
Connecticut	–	29	12	1.1	20.6	.4	.6	5.4	57.3	52.1	109.3	(D)	.7	37.4
Georgia	E3	36	12	.9	17.8	.6	1.1	9.0	95.4	96.2	193.2	5.8	.7	50.7
Illinois	E1	114	39	3.3	75.8	1.9	3.8	37.6	370.0	403.8	779.5	22.9	FF	(D)
Indiana	E2	25	2	.3	5.6	.2	.4	2.9	21.5	34.6	55.7	.8	.6	25.6
Iowa	E2	8	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Kansas	E2	14	8	1.1	22.4	.8	1.8	15.1	93.2	67.8	161.7	7.2	.9	37.4
Louisiana	–	25	7	.6	13.1	.4	.8	7.7	91.9	79.7	170.4	8.5	.7	55.0
Maryland	E1	16	4	.3	5.3	.2	.4	2.6	12.7	16.1	28.4	(D)	.7	15.0
Massachusetts	–	25	11	1.2	30.7	.7	1.4	17.1	76.7	70.6	146.2	12.1	1.5	66.9
Michigan	E1	61	24	2.3	52.0	1.3	2.9	26.7	165.1	193.0	364.2	16.3	2.4	114.3
Minnesota	–	28	6	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Missouri	E2	32	9	.6	10.7	.4	.7	5.1	40.0	30.8	70.8	.9	1.1	78.0
New Jersey	E2	99	33	2.8	59.6	1.5	3.1	27.4	219.0	269.6	490.9	21.2	3.8	143.9
New Mexico	–	5	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
New York	E3	87	21	2.7	61.2	1.8	3.3	34.8	238.7	298.8	537.9	19.0	1.8	82.4
North Carolina	–	31	7	1.3	18.0	.8	1.4	7.2	60.3	59.6	121.1	1.6	.9	33.3
Ohio	E1	103	29	4.1	92.6	2.1	4.6	45.1	233.0	322.1	562.6	38.1	3.9	206.4
Oklahoma	E2	25	6	.4	10.4	.3	.6	5.9	39.2	52.7	92.0	4.4	.2	16.4
Oregon	E7	17	2	.2	3.4	.1	.2	1.8	9.4	12.7	21.7	(D)	(NA)	(NA)
Pennsylvania	E1	82	32	2.2	46.3	1.1	2.1	20.2	118.1	146.9	266.4	7.6	1.8	78.5
South Carolina	E1	18	2	.6	12.0	.4	.9	7.5	30.7	15.0	46.4	(D)	(NA)	(NA)
Tennessee	–	22	6	.8	14.7	.5	1.0	7.9	40.7	75.7	118.8	2.5	.7	26.3
Texas	E1	140	44	3.3	68.5	1.9	4.2	34.2	321.5	326.8	651.7	121.1	3.3	206.6
Utah	E1	11	5	.3	5.0	.2	.5	3.5	12.9	9.3	22.2	1.7	.3	8.9
Virginia	–	15	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Wisconsin	–	32	12	.7	11.7	.3	.7	4.6	45.0	56.9	102.3	1.8	.7	27.5

Note: For qualifications of data, see footnotes on table 1a.

[1]Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

[2]Includes establishments with payroll at any time during year.

[3]Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

[4]Beginning in 1982, all respondents were requested to report their inventories at cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, data for inventories and value added by manufacture are not comparable to prior-year data.

Table 3a. Summary Statistics for the Industry: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Adhesives and sealants (SIC 2891)	Explosives (SIC 2892)	Printing ink (SIC 2893)	Carbon black (SIC 2895)	Chemical preparations, n.e.c. (SIC 2899)
Companies[1] ---- number	517	73	228	8	1 242
All establishments[2] ---- do	683	114	467	25	1 439
With 1 to 19 employees ---- do	450	69	314	1	1 030
With 20 to 99 employees ---- do	198	22	139	16	326
With 100 employees or more ---- do	35	23	14	8	83
All employees:					
Average for year ---- 1,000	18.2	12.3	9.9	2.1	39.6
Annual payroll[3] ---- mil. dol.	365.5	253.3	214.1	54.9	834.2

See footnotes at end of table.

Table 3a. **Summary Statistics for the Industry: 1982**—Con.

[For meening of ebbrevietions end symbols, see introductory text. For explanation of terms, see appendixes]

Item	Adhesives and sealants (SIC 2891)	Explosives (SIC 2892)	Printing ink (SIC 2893)	Carbon black (SIC 2895)	Chemical preparations, n.e.c. (SIC 2899)
Production workers:					
Average for year 1,000	10.9	7.9	5.5	1.6	23.0
March do	11.1	8.3	5.5	1.6	23.6
May do	11.0	8.2	5.5	1.6	23.1
August do	10.9	7.8	5.4	1.6	22.7
November do	10.7	7.5	5.5	1.6	22.5
Hours millions	20.7	15.1	11.0	3.0	46.6
January to March do	5.2	4.0	2.7	.8	11.7
April to June do	5.3	3.8	2.7	.8	11.8
July to September do	5.2	3.6	2.7	.7	11.5
October to December do	5.0	3.6	2.8	.7	11.5
Weges mil. dol.	173.0	144.1	101.9	39.1	428.7
Velue added by manufacture[4] do	1 150.2	580.7	556.4	190.8	2 942.9
Cost of materials, etc.[5] do	1 699.9	340.8	1 016.2	433.7	3 350.8
Materials, parts, containers, etc., consumed do	1 562.9	255.8	966.1	370.5	3 007.4
Resales do	69.4	22.1	31.6	(Z)	121.6
Fuels consumed[6] do	25.2	39.2	6.7	40.0	137.1
Purchased electric energy[7] do	29.6	22.6	11.1	23.0	67.8
Contract work do	12.7	1.1	.7	.2	16.8
Value of shipments, including resales do	2 856.7	922.7	1 571.5	632.9	6 329.5
Value of resales do	112.9	25.2	40.4	(D)	171.3
Manufacturers' inventories (see tables 3b and 3c)					
Capital expenditures for plant and equipment[8] do	81.5	34.6	27.3	40.1	365.9
New capital expenditures do	72.4	32.9	25.5	39.4	350.4
New buildings and other structures do	13.1	8.0	6.0	3.7	65.0
New machinery and equipment do	59.3	24.9	19.5	35.7	285.4
Used capital expenditures do	9.2	1.8	1.8	.8	15.6
Primary product specialization ratio[9] percent	90	91	98	100	85
Coverage ratio[10] do	84	96	97	[11]95	84

[1]For the census, a compeny is defined as a business orgenization consisting of one establishment or more under common ownership or control.
[2]Includes esteblishments with payroll at any time during year.
[3]Deta on supplemental labor costs ere not included in annual payroll, but are shown in table 3d.
[4]Value added by manufecture is computed using inventory deta reported on e cost or merket besis prior to eny adjustment to LIFO cost. See table 3b, footnote 1 for further explenetion.
[5]Data on purchased services for the repair of buildings and machinery and for communicetion services are not included in cost of meterials, etc., but are shown in table 3d.
[6]Data on purchased fuels by type were not collected for 1982. See MC82-S-4, Fuels and Electric Energy Consumed, for 1981 data on purchased fuels by type.
[7]Data on quantity of electric energy used for heat and power ere included in table 3d.
[8]Date on capital expenditures for new machinery and equipment by type, depreciable assets, retirements, rentel peyments, and deprecietion are included in table 3d.
[9]Represents ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for establishments clessified in industry.
[10]Represents ratio of primary products shipped by esteblishments clessified in industry to total shipments of such products by ell manufacturing establishments, wherever classified.
[11]Minimum percentage; exact percentage withheld to avoid disclosing data for individuel companies.

Table 3b. **Value of Inventories for the Industry: End of 1981 and 1982**

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Adhesives and seelants (SIC 2891)		Explosives (SIC 2892)		Printing ink (SIC 2893)		Cerbon black (SIC 2895)		Chemical preperations, n.e.c. (SIC 2899)	
	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982
Total Inventories[1]	**376.8**	**362.5**	**105.3**	**101.1**	**202.8**	**196.9**	**90.7**	**80.4**	**922.1**	**871.6**
Detail by method of valuation:										
Subject to LIFO costing[2]	95.8	85.2	42.3	42.8	71.7	70.2	63.5	57.1	392.5	376.9
LIFO reserve	36.5	33.1	21.4	21.8	29.0	29.0	41.1	39.2	135.0	125.2
LIFO value	59.3	52.1	20.9	21.0	42.6	41.2	22.5	17.8	257.5	251.7
Not subject to LIFO costing	201.0	202.6	49.2	44.0	70.4	69.4	27.2	23.3	342.5	324.6
Valuation method not reported[3]	78.6	72.9	12.5	12.5	52.3	50.1	(Z)	(Z)	169.9	157.4
Amount subject to LIFO reported without essocieted reserve end velue[4]	1.5	1.8	1.3	1.8	8.5	7.2	–	(Z)	17.2	12.6
Detail by stage of febricetion:										
Finished goods	165.2	163.4	38.7	36.7	87.0	87.6	53.4	45.1	410.0	376.5
Work in process	39.1	34.3	21.5	22.2	6.8	7.3	–	–	152.4	150.3
Meteriels end supplies	172.5	164.8	45.2	42.2	109.1	102.0	37.3	35.3	359.6	344.7

[1]Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for ell sector reports. Prior to 1982, respondents were permitted to velue inventories using eny generelly eccepted eccounting method (LIFO, FIFO, merket, to neme e few). In 1982, ell respondents were requested to report inventories et cost or merket. LIFO users were esked to first report inventory velues prior to the LIFO edjustment end then to report the LIFO reserve end the LIFO velue efter edjustment for the reserve. For further explenetion, see inventories in appendixes.
[2]Only includes deta reported by respondents who (e) indicated emount of inventories subject to LIFO cost, end (b) provided sufficient informetion to determine essocieted LIFO reserve end velue figures.
[3]Includes deta estimeted for nonresponse end nonmeil edministretive records end dete reported by respondents who provided totel inventory figures without other informetion.
[4]Includes data reported by respondents who indicated their inventories were subject to LIFO cost, but did not provide essocieted LIFO reserve end velue figures.

Table 3c. Inventories by Specific Method of Valuation for the Industry: End of 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Adhesives and sealants (SIC 2891)		Explosives (SIC 2892)		Printing ink (SIC 2893)		Carbon black (SIC 2895)		Chemical preparations, n.e.c. (SIC 2899)	
	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)
Total inventories	**100.0**	**(X)**	**100.0**	**(X)**	**100.0**	**(X)**	**100.0**	**(X)**	**100.0**	**(X)**
Last-In, First-Out (LIFO) methods	23.5	(X)	42.4	(X)	35.6	(X)	71.0	(X)	43.2	(X)
Non-LIFO methods	55.9	(X)	43.5	(X)	35.3	(X)	29.0	(X)	37.2	(X)
Cost basis:										
First-In, First-Out (FIFO)	13.1	2.9	9.6	3.6	26.1	2.5	19.3	1.0	17.1	1.6
Average cost	6.0	1.3	11.7	2.8	(S)	(S)	8.1	1.0	4.3	.7
Specific or actual cost	2.7	1.0	7.3	2.6	2.8	.8	1.6	.5	3.4	1.1
Standard cost	33.9	3.8	14.9	6.2	(S)	(S)	(Z)	(Z)	10.8	1.9
Other	(Z)	(Z)	(Z)	(Z)	(S)	(S)	(Z)	(Z)	1.4	.6
Market basis:										
Market lower than cost	(S)	(S)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	.1	(Z)
Market always used	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(S)	(S)
Valuation method not reported	20.1	(X)	12.3	(X)	25.4	(X)	(Z)	(X)	18.1	(X)
Amount subject to LIFO reported without associated reserve and value	.5	(X)	1.8	(X)	3.7	(X)	(Z)	(X)	1.4	(X)

Note: The percentages shown for the LIFO and non-LIFO totals and the categories "valuation method not reported" and "amount subject to LIFO reported..." are based on the census universe estimates included in table 3b. The percentages shown for the specific non-LIFO methods of valuation (e.g., FIFO, etc.) are based on a representative sample of establishments included in the annual survey of manufactures (ASM) panel for 1982 (see appendixes for description of ASM). The absolute standard error of each of the ASM estimates is shown above.

Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Adhesives and sealants (SIC 2891)		Explosives (SIC 2892)		Printing ink (SIC 2893)		Carbon black (SIC 2895)		Chemical preparations, n.e.c. (SIC 2899)	
	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)	Amount (million dollars)	Relative standard error of estimate[1] (percent)
Supplemental labor costs:										
Total	85.7	3	63.4	2	40.0	4	15.1	2	185.0	3
Legal costs	36.0	7	21.5	3	19.1	5	4.0	3	69.4	3
Voluntary costs	49.7	5	41.8	3	20.9	6	11.1	2	115.6	4
Purchased services:										
Cost of purchased services for the repair of—										
Buildings and other structures	3.7	19	2.7	8	5.4	4	1.4	14	12.8	21
Response coverage ratio (percent)[2]	76.1	(X)	88.5	(X)	66.3	(X)	72.5	(X)	74.0	(X)
Machinery	12.4	16	7.2	6	5.0	15	16.8	11	31.9	8
Response coverage ratio (percent)[2]	79.8	(X)	88.7	(X)	80.7	(X)	83.7	(X)	78.1	(X)
Cost of purchased communication services	6.9	11	2.0	17	2.3	16	.7	9	9.7	10
Response coverage ratio (percent)[2]	80.1	(X)	86.2	(X)	76.2	(X)	83.7	(X)	79.4	(X)
Electric energy used for heat and power:										
Purchased:										
Quantity (million kWh)	373.3	38	458.4	4	171.9	3	524.5	3	1 351.5	1
Cost	29.6	(X)	22.6	(X)	11.1	(X)	23.0	(X)	67.8	(X)
Generated less sold (million kWh)	(S)	(NA)	(D)	(NA)	–	1	(S)	(NA)	111.7	3
Gross book value of depreciable assets:										
Total:										
Beginning of year	787.3	7	263.3	6	295.4	6	383.2	6	2 337.7	6
New capital expenditures	66.3	21	25.6	19	25.7	26	40.5	15	261.2	13
Used capital expenditures	3.2	49	.8	5	1.1	59	.4	38	10.9	30
Retirements	19.4	20	10.9	15	25.7	31	5.9	26	47.2	12
End of year	837.4	7	278.8	5	296.5	6	418.2	6	2 562.7	6
Buildings and other structures:										
Beginning of year	260.2	9	80.0	7	112.5	8	65.8	6	589.8	7
New capital expenditures	9.0	15	8.9	51	7.3	59	1.0	21	54.8	17
Used capital expenditures	.8	49	.5	4	–	1	–	1	6.4	44
Retirements	4.4	18	2.7	28	15.3	37	.1	23	7.2	17
End of year	265.5	9	86.7	8	104.5	7	66.7	6	643.7	7
Machinery and equipment:										
Beginning of year	527.1	8	183.3	7	183.0	6	317.4	7	1 747.9	5
New capital expenditures	57.3	23	16.7	5	18.4	21	39.5	15	206.5	13
Automobiles, trucks, etc., for highway use	4.0	33	1.1	21	1.7	24	.1	1	3.6	17
Computers and peripheral data processing equipment	1.6	33	.4	1	.4	43	.1	1	1.1	18
All other	22.8	10	12.8	5	13.8	24	36.5	17	165.2	16
New machinery and equipment, n.s.k.[3]	28.9	44	2.4	24	2.6	62	2.8	14	36.6	20
Used capital expenditures	2.4	63	.3	6	1.1	59	.4	38	4.5	20
Retirements	15.0	23	8.2	11	10.5	32	5.8	26	39.9	13
End of year	571.9	8	192.2	6	192.0	6	351.5	7	1 919.0	6
Rental payments:										
Total	15.6	16	2.6	23	3.8	16	1.1	10	22.9	19
Buildings and other structures	7.4	31	.7	10	1.5	31	(Z)	1	10.6	22
Machinery and equipment	8.2	12	1.9	29	2.3	13	1.1	10	12.3	21
Depreciation charges during 1982:										
Total	56.7	7	20.0	8	18.4	6	24.1	4	162.0	7
Buildings and other structures	10.3	8	4.5	4	4.0	9	2.3	23	28.2	6
Machinery and equipment	46.4	8	15.5	9	14.4	7	21.8	5	133.9	7

See footnotes at end of table.

Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982—Con.

Note: Data for totel new capital expenditures, new building expenditures, new machinery expenditures, and total used expenditures are also shown in table 3a. Data in table 3a are census universe totals and may differ from annual survey of manufactures (ASM) sample estimates shown in this table. Data in this table represent best estimates of year-to-year change as measured by the continuing ASM sample. However, they are subject to sampling error and, hence, as estimates of level, are not as reliable as universe figures shown in table 3a.

[1]For description of relative standard error of estimate, see Qualifications of the Data in appendixes.
[2]Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to weighted total employment for all sample establishments classified in industry. (See appendixes for explanation of sample weight.)
[3]Represents total machinery and equipment expenditures for establishments that did not break down their expenditures by specific type.

Table 4. Industry Statistics by Employment Size of Establishment: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E[1]	All establishments (no.)	All employees · Number (1,000)	All employees · Payroll (million dollars)	Production workers · Number (1,000)	Production workers · Hours (millions)	Production workers · Wages (million dollars)	Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
INDUSTRY 2891, ADHESIVES AND SEALANTS												
Total	**E1**	683	**18.2**	365.5	**10.9**	**20.7**	**173.0**	**1 150.2**	**1 699.9**	**2 856.7**	**72.4**	362.5
Establishments with an average of—												
1 to 4 employees	E7	183	.4	6.8	.3	.5	4.0	29.4	36.2	65.9	2.3	8.1
5 to 9 employees	E5	134	.9	16.9	.6	1.1	8.9	80.1	101.3	181.6	3.1	22.1
10 to 19 employees	E4	133	1.8	33.9	1.2	2.2	16.1	119.2	187.4	307.6	5.1	36.4
20 to 49 employees	E2	138	4.2	82.4	2.5	4.8	38.9	278.8	529.3	809.4	16.2	80.7
50 to 99 employees	E1	60	4.0	77.8	2.4	4.7	37.7	211.8	404.2	619.2	18.0	75.5
100 to 249 employees	-	27	3.9	78.0	2.4	4.7	38.0	266.8	259.8	523.9	16.6	86.7
250 to 499 employees	-	7	2.9	69.7	1.6	2.7	29.3	164.1	181.7	348.9	11.1	53.1
500 to 999 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records[2]	E9	193	.8	11.4	.5	1.0	6.2	50.3	58.4	109.4	1.7	12.8
INDUSTRY 2892, EXPLOSIVES												
Total	**-**	114	**12.3**	253.3	**7.9**	**15.1**	**144.1**	**580.7**	**340.8**	**922.7**	**32.9**	**101.1**
Establishments with an average of—												
1 to 4 employees	E4	25	(Z)	.7	(Z)	.1	.6	2.7	2.4	5.0	.3	.4
5 to 9 employees	E3	22	.2	2.6	.1	.2	1.8	7.6	12.7	20.3	1.0	2.1
10 to 19 employees	E1	22	.3	6.1	.2	.4	3.1	12.9	39.9	52.8	1.8	4.8
20 to 49 employees	-	9	.3	5.0	.2	.4	3.1	12.5	21.8	34.1	1.1	6.1
50 to 99 employees	E2	13	.9	17.2	.6	1.1	9.4	52.1	45.5	100.1	8.5	12.1
100 to 249 employees	-	8	1.2	26.2	.6	1.6	11.2	57.6	36.5	96.4	3.4	9.9
250 to 499 employees	-	11	3.9	85.3	2.4	4.7	47.9	181.1	150.4	327.5	15.1	59.6
500 to 999 employees	E1	2	5.5	110.2	3.7	6.7	67.0	254.2	31.7	286.5	1.6	6.1
1,000 to 2,499 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2,500 employees or more	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records[2]	E9	21	.1	1.3	.1	.1	.8	3.2	2.2	5.5	.1	.7
INDUSTRY 2893, PRINTING INK												
Total	**E1**	467	9.9	**214.1**	5.5	**11.0**	**101.9**	**556.4**	**1 016.2**	**1 571.5**	25.5	196.9
Establishments with an average of—												
1 to 4 employees	E7	85	.2	3.6	.1	.2	1.9	8.3	18.8	27.3	.4	3.9
5 to 9 employees	E3	99	.7	13.1	.4	.8	5.9	38.8	73.3	112.1	1.3	13.4
10 to 19 employees	E2	130	1.8	37.7	1.0	2.0	17.0	99.3	188.4	287.7	3.6	35.3
20 to 49 employees	E1	112	3.4	75.9	1.9	3.8	35.1	204.7	381.5	585.6	11.4	70.3
50 to 99 employees	E1	27	1.8	42.2	1.0	2.1	20.7	114.8	203.3	317.9	4.8	37.4
100 to 249 employees	E1	14	2.0	41.7	1.1	2.0	21.4	90.5	151.0	240.7	4.0	36.5
Covered by administrative records[2]	E9	81	.4	5.9	.2	.4	2.9	13.4	29.1	42.6	.7	5.9
INDUSTRY 2895, CARBON BLACK												
Total	**-**	25	**2.1**	54.9	**1.6**	**3.0**	**39.1**	**190.8**	**433.7**	632.9	**39.4**	80.4
Establishments with an average of—												
1 to 4 employees	-	1	.1	3.2	.1	.1	2.0	13.8	42.4	56.7	5.9	7.3
20 to 49 employees	-	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
50 to 99 employees	-	12	.8	21.3	.5	1.1	12.8	73.6	154.9	231.8	12.4	32.6
100 to 249 employees	-	8	1.2	30.4	1.0	1.8	24.2	103.4	236.5	344.4	21.1	40.5
INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.												
Total	**E1**	**1 439**	39.6	834.2	**23.0**	46.6	**428.7**	**2 942.9**	**3 350.8**	**6 329.5**	**350.4**	871.6
Establishments with en everege of—												
1 to 4 employees	E7	514	1.0	16.7	.7	1.3	11.1	64.6	77.5	144.4	4.0	18.0
5 to 9 employees	E4	282	1.9	34.8	1.2	2.5	21.2	135.1	145.2	281.5	8.4	37.2
10 to 19 employees	E3	234	3.3	65.4	2.0	4.0	33.8	238.2	307.7	541.9	94.6	87.1
20 to 49 employees	E1	219	6.9	132.0	3.7	7.1	56.4	449.7	538.7	997.6	30.5	129.4
50 to 99 employees	E1	107	7.2	146.8	4.0	7.9	69.5	587.5	718.3	1 306.8	46.2	148.6
100 to 249 employees	E2	64	9.9	199.0	6.0	12.3	106.4	702.9	823.8	1 539.4	84.9	240.2
250 to 499 employees	-	13	4.6	113.1	2.7	5.7	61.4	371.0	298.3	673.6	37.4	100.0
500 to 999 employees	-	5	4.8	126.3	2.8	5.8	69.0	394.0	441.2	844.2	44.3	111.1
1,000 to 2,499 employees	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administretive records[2]	E9	467	1.5	20.8	1.0	2.1	13.0	71.1	88.9	161.3	4.3	19.2

Note: For quelifications of dete, see footnotes on teble 1a. Date shown es e (D) are included in underscored figures above.

[1]Peyroll end sales date for some small single-unit compenies with up to 20 employees (cutoff veried by industry) were obteined from edministretive records of other government egencies rether then from census report forms. These data were then used in conjunction with industry evereges to estimete the items shown for these smell esteblishments. This technique wes also used for a smell number of other establishments whose reports were not received et time dete were tebuleted. The following symbols ere shown for those States where estimeted dete besed on edministrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.
[2]Report forms were not meiled to small single-unit compenies with up to 20 employees (cutoff veried by industry). Peyroll and sales dete for 1982 were obteined from edministretive records supplied by other egencies of the Federel Government. Those dete were then used in conjunction with industry evereges to estimete the items shown. Dete are also included in respective size classes shown.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing operations of individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
2891	**Adhesives and sealants:**										
	Entire industry	683	18.2	365.5	10.9	20.7	173.0	1 150.2	1 699.9	2 856.7	72.4
	Establishments with 75 percent specialization or more	631	14.2	277.2	8.4	15.9	126.3	890.4	1 378.5	2 277.9	51.0
28913	Natural base glues and adhesives:										
	Establishments with this product class primary	18	1.2	28.9	.6	1.3	9.4	66.2	77.6	146.5	5.3
	Establishments with 75 percent specialization or more in class	11	1.0	25.4	.5	1.1	7.5	54.7	54.5	111.2	5.0
28914	Synthetic resin and rubber adhesives:										
	Establishments with this product class primary	274	10.9	220.0	6.4	11.9	105.5	683.2	1 100.1	1 785.8	44.8
	Establishments with 75 percent specialization or more in class	213	7.0	136.5	4.0	7.5	62.8	420.9	772.2	1 194.7	25.2
28915	Caulking compounds and sealants:										
	Establishments with this product class primary	79	4.0	81.1	2.5	4.9	39.7	271.7	356.6	628.8	15.1
	Establishments with 75 percent specialization or more in class	51	2.2	42.9	1.3	2.7	19.6	147.1	220.6	370.1	10.0
2892	**Explosives:**										
	Entire industry	114	12.3	253.3	7.9	15.1	144.1	580.7	340.8	922.7	32.9
	Establishments with 75 percent specialization or more	98	6.1	123.1	3.8	7.3	65.6	263.9	239.7	504.8	28.2
2893	**Printing ink:**										
	Entire industry	467	9.9	214.1	5.5	11.0	101.9	556.4	1 016.2	1 571.5	25.5
	Establishments with 75 percent specialization or more	451	9.6	205.7	5.3	10.6	98.0	544.5	977.3	1 520.0	23.3
28931	Letterpress inks (black and color):										
	Establishments with this product class primary	17	.3	6.1	.2	.3	3.0	22.8	42.1	65.3	1.1
	Establishments with 75 percent specialization or more in class	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
28932	Lithographic and offset inks (black and color):										
	Establishments with this product class primary	172	4.5	103.7	2.5	5.2	50.7	242.0	418.6	660.8	13.0
	Establishments with 75 percent specialization or more in class	116	3.0	71.1	1.7	3.6	34.8	156.8	237.7	393.7	6.5
28933	Gravure inks:										
	Establishments with this product class primary	39	1.5	31.6	.8	1.7	16.1	111.1	231.1	340.3	5.1
	Establishments with 75 percent specialization or more in class	20	.7	17.4	.4	.9	8.5	80.4	151.2	230.2	4.0
28934	Flexographic inks:										
	Establishments with this product class primary	58	1.6	29.6	.8	1.5	13.5	78.7	144.6	223.0	2.8
	Establishments with 75 percent specialization or more in class	31	.7	14.6	.4	.8	6.4	39.4	74.4	113.5	1.6
28935	Printing inks, n.e.c.:										
	Establishments with this product class primary	28	1.0	20.7	.5	1.0	8.3	51.9	70.6	122.3	1.0
	Establishments with 75 percent specialization or more in class	22	.7	15.5	.4	.7	6.5	38.1	54.2	92.2	.7
2895	**Carbon black:**										
	Entire industry	25	2.1	54.9	1.6	3.0	39.1	190.8	433.7	632.9	39.4
	Establishments with 75 percent specialization or more	24	2.1	54.9	1.6	3.0	39.1	190.8	433.7	632.9	(D)
2899	**Chemical preparations, n.e.c.:**										
	Entire industry	1 439	39.6	834.2	23.0	46.6	428.7	2 942.9	3 350.8	6 329.5	350.4
	Establishments with 75 percent specialization or more	1 337	30.3	622.6	17.4	35.6	315.2	2 228.8	2 459.5	4 698.6	200.8
28991	Salt:										
	Establishments with this product class primary	33	4.0	84.4	3.0	6.8	60.7	274.4	133.5	406.5	36.5
	Establishments with 75 percent specialization or more in class	31	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
28992	Fatty acids (produced for sale as such):										
	Establishments with this product class primary	13	2.0	49.2	1.3	2.7	29.8	97.3	260.0	366.2	26.5
	Establishments with 75 percent specialization or more in class	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
28994	Gelatin, except ready-to-eat desserts:										
	Establishments with this product class primary	8	1.3	29.9	.9	1.8	18.9	82.0	68.6	147.9	(D)
	Establishments with 75 percent specialization or more in class	8	1.3	29.9	.9	1.8	18.9	82.0	68.6	147.9	12.1
28995	Essential oils, fireworks, and chemical preparations, n.e.c.:										
	Establishments with this product class primary	552	26.3	569.1	14.0	27.6	260.8	2 185.6	2 527.2	4 740.4	174.8
	Establishments with 75 percent specialization or more in class	460	18.5	390.5	9.3	18.4	168.6	1 506.3	1 794.8	3 315.9	122.6

Note: For qualifications of data, see footnotes on table 1a.

Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments, Specialization and Coverage Ratios for the Industry: 1982 and Earlier Census

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments			
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio Col. B÷ Col. B+C (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio Col. B÷ Col. F (percent)
		A	B	C	D	E	F	G	H	I
2891	Adhesives and sealants 1982	2 856.7	2 450.0	284.9	121.8	90	2 903.0	2 450.0	453.0	84
	1977	1 808.1	1 525.2	190.9	92.0	89	1 873.1	1 525.2	347.9	81
	1972	928.0	782.7	98.5	46.7	89	954.3	782.7	171.6	82
2892	Explosives 1982	922.7	564.5	58.4	299.9	[1]91	587.6	564.5	23.1	[1]96
	1977	666.3	431.4	70.7	164.2	[1]86	435.5	(D)	(D)	[1,2]95
	1972	408.6	225.3	20.6	162.8	[1]92	237.6	(D)	(D)	[1,2]95
2893	Printing ink 1982	1 571.5	1 476.0	32.6	62.9	98	1 518.7	1 476.0	42.8	97
	1977	944.9	879.3	22.6	43.0	97	904.0	879.3	24.7	97
	1972	508.4	460.7	24.9	22.7	95	498.0	460.7	37.3	93
2895	Carbon black 1982	632.9	(D)	-	(D)	100	652.7	(D)	(D)	[2]95
	1977	468.4	(D)	-	(D)	100	466.2	(D)	(D)	[2]95
	1972	227.0	(D)	-	(D)	100	227.1	(D)	(D)	[2]95
2899	Chemical preparations, n.e.c. 1982	6 329.5	5 144.6	907.8	277.1	85	6 101.0	5 144.6	956.4	84
	1977	3 950.6	3 270.6	475.7	204.3	87	4 243.8	3 270.6	973.2	77
	1972	2 202.3	1 675.0	321.6	205.7	84	2 228.2	1 675.0	553.2	75

[1]Government-owned, privately-operated establishments did not enter into calculation of "primary product specialization ratio" or "coverage ratio," as all dollar receipts for these establishments were included in "miscellaneous receipts."

[2]Minimum percentage; exact percentage withheld to avoid disclosing data for individual companies.

Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Adhesives and sealants (SIC 2891)	Explosives (SIC 2892)	Printing ink (SIC 2893)	Carbon black (SIC 2895)	Chemical preparations, n.e.c. (SIC 2899)	Other industries
	Total	(X)	2 856.7	922.7	1 571.5	632.9	6 329.5	(X)
	Primary products	(X)	2 450.0	564.5	1 476.0	(D)	5 144.6	(X)
	Secondary products	(X)	284.9	58.4	32.6	-	907.8	(X)
	Miscellaneous receipts	(X)	121.8	299.9	62.9	(D)	277.1	(X)
2891-28913	**Adhesives and sealants**	2 903.0	2 450.0	-	(D)	-	(D)	442.0
28913	Natural base glues and adhesives	177.5	(D)	-	-	-	-	(D)
28914	Synthetic resin and rubber adhesives	1 833.8	1 487.5	-	(D)	-	7.6	(D)
28915	Caulking compounds and sealants	602.8	526.7	-	-	-	1.9	74.2
28910	Adhesives and sealants, n.s.k.	288.9	(D)	-	(D)	-	(D)	11.3
28920	**Explosives**	587.6	(D)	564.5	-	-	-	(D)
2893-28931	**Printing ink**	1 518.7	-	-	1 476.0	-	-	42.8
28931	Letterpress inks (black and color)	128.0	-	-	(D)	-	-	(D)
28932	Lithographic and offset inks (black and color)	536.4	-	-	(D)	-	-	(D)
28933	Gravure inks	325.8	-	-	322.1	-	-	3.7
28934	Flexographic inks	241.7	-	-	241.7	-	-	-
28935	Printing inks, n.e.c.	143.8	-	-	125.4	-	-	18.4
28930	Printing ink, n.s.k.	143.1	-	-	(D)	-	-	(D)
28950	**Carbon black (channel and furnace process only)**	652.7	-	-	-	(D)	-	(D)
2899-28991	**Chemical preparations, n.e.c.**	6 101.0	(D)	(D)	-	-	5 144.6	(D)
28991	Salt	419.8	-	-	-	-	399.2	20.6
28992	Fatty acids (produced for sale as such)	350.8	-	-	-	-	207.1	143.7
28994	Gelatin, except ready-to-eat desserts	242.3	(D)	-	-	-	138.4	(D)
28995	Essential oils, fireworks, and chemical preparations, n.e.c.	4 437.4	20.6	(D)	-	-	3 764.1	(D)
28990	Chemical preparations, n.e.c., n.s.k.	650.7	-	(D)	-	-	635.8	(D)

See footnotes at end of table.

Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982—Con.

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Adhesives and sealants (SIC 2891)	Explosives (SIC 2892)	Printing ink (SIC 2893)	Carbon black (SIC 2895)	Chemical preparations, n.e.c. (SIC 2899)	Other industries
	OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP							
1476	Rock salt	(X)	-	-	-	-	(D)	(X)
2046-	Wet corn milling	(X)	(D)	-	-	-	-	(X)
2076-	Vegetable oil mill products, n.e.c.	(X)	(D)	-	-	-	-	(X)
2077-	Animal and marine fats and oils	(X)	(D)	-	-	-	8.9	(X)
2086-	Bottled and canned soft drinks	(X)	-	-	-	-	(D)	(X)
2499-	Wood products, n.e.c.	(X)	(D)	-	-	-	(D)	(X)
2641-	Coated and glazed paper	(X)	(D)	-	-	-	(D)	(X)
2795-	Lithographic platemaking services	(X)	-	-	-	-	(D)	(X)
2812-	Alkalies and chlorine	(X)	-	-	-	-	(D)	(X)
2816-	Inorganic pigments	(X)	-	-	-	-	(D)	(X)
2819-	Industrial inorganic chemicals, n.e.c.	(X)	(D)	(D)	-	-	92.1	(X)
2821-	Plastics materials and resins	(X)	69.5	(D)	-	-	22.5	(X)
2822-	Synthetic rubber	(X)	-	-	-	-	(D)	(X)
2841-	Soap and other detergents	(X)	1.4	-	-	-	59.3	(X)
2842-	Polishes and sanitation goods	(X)	1.5	-	-	-	39.6	(X)
2843-	Surface active agents	(X)	(D)	-	-	-	79.3	(X)
2851-	Paints and allied products	(X)	68.8	-	28.0	-	14.6	(X)
2861-	Gum and wood chemicals	(X)	(D)	-	-	-	(D)	(X)
2865-	Cyclic crudes and intermediates	(X)	(D)	-	(D)	-	(D)	(X)
2869-	Industrial organic chemicals, n.e.c.	(X)	13.6	(D)	-	-	221.7	(X)
2873-	Nitrogenous fertilizers	(X)	-	(D)	-	-	-	(X)
2875-	Fertilizers, mixing only	(X)	-	2.4	-	-	(D)	(X)
2879-	Agricultural chemicals, n.e.c.	(X)	-	-	-	-	(D)	(X)
2952-	Asphalt felts and coatings	(X)	6.0	-	-	-	-	(X)
2992-	Lubricating oils and greases	(X)	(D)	-	-	-	24.7	(X)
3069-	Fabricated rubber products, n.e.c.	(X)	15.3	-	-	-	-	(X)
3079-	Miscellaneous plastics products	(X)	6.3	-	-	-	126.5	(X)
3229-	Pressed and blown glass, n.e.c.	(X)	-	-	-	-	(D)	(X)
3272-	Concrete products, n.e.c.	(X)	1.9	-	-	-	(D)	(X)
3291-	Abrasive products	(X)	-	-	-	-	(D)	(X)
3299-	Nonmetallic mineral products, n.e.c.	(X)	(D)	-	-	-	-	(X)
3341-	Secondary nonferrous metals	(X)	(D)	-	-	-	-	(X)
3499-	Fabricated metal products, n.e.c.	(X)	-	(D)	-	-	(D)	(X)
3555-	Printing trades machinery	(X)	-	-	(D)	-	-	(X)
3561-	Pumps and pumping equipment	(X)	-	-	-	-	(D)	(X)
3569-	General industrial machinery, n.e.c.	(X)	-	(D)	-	-	(D)	(X)
3589-	Service industry machinery, n.e.c.	(X)	-	(D)	-	-	(D)	(X)
3699-	Electrical equipment and supplies, n.e.c.	(X)	(D)	-	-	-	(D)	(X)
3861-	Photographic equipment and supplies	(X)	-	-	-	-	(D)	(X)
3991-	Brooms and brushes	(X)	-	-	-	-	(D)	(X)
3999-	Manufacturing industries, n.e.c.	(X)	-	-	-	-	(D)	(X)
	MISCELLANEOUS RECEIPTS							
93000 00	Receipts for work done for others on their materials	(X)	4.1	(D)	(D)	-	73.4	(X)
99980 13	Sales of scrap and refuse	(X)	.4	.5	(D)	-	.7	(X)
99980 41	Receipts for research and development work	(X)	(D)	(D)	-	-	(D)	(X)
99980 98	Other miscellaneous receipts, including receipts for repair work, etc.	(X)	3.8	.1	(D)	-	28.5	(X)
99980 00	Other miscellaneous receipts, n.s.k.	(X)	(D)	(D)	-	-	(D)	
99989 00	Sales of products bought and resold without further manufacture, processing, or assembly at establishment	(X)	112.9	25.2	40.4	(D)	171.3	(X)

Table 5c-2. Industry—Product Analysis—Other Industries With Shipments of Primary Products: 1982

[Million dollars. Table is a continuation of table 5c-1 and shows where products of industries in this chapter (referred to as primary products and listed in table 6a) are made. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column of table 5c-1. Specified "Other industries" are listed in this table if they account for more than $5 million of products primary to this chapter. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Other industries	Value	1982 product code	Other industries	Value
2891-	**ADHESIVES AND SEALANTS**		**2893-**	**PRINTING INK**	
	2641 Paper coating and glazing	(D)		2851 Paints and allied products	5.9
	2821 Plastics materials and resins	112.8		3579 Office machines, n.e.c., and typewriters	(D)
	2822 Synthetic rubber	(D)			
	2843 Surface active agents	(D)			
	2851 Paints and allied products	74.4			
			2899-	**CHEMICAL PREPARATIONS, N.E.C.**	
	2869 Industrial organic chemicals, n.e.c.	(D)			
	2952 Asphalt felts and coatings	15.6			
	3069 Fabricated rubber products, n.e.c.	64.2		1472 Barite	(D)
	3079 Miscellaneous plastics products	17.3		1474 Potash, soda, and borate minerals	(D)
	3299 Nonmetallic mineral products, n.e.c.	(D)		1476 Rock salt	(D)
	3714 Motor vehicle parts and accessories	(D)		2033 Canned fruits and vegetables	(D)
	3996 Hard surface floor coverings	(D)		2037 Frozen fruits and vegetables	12.2

Table 5c-2. Industry—Product Analysis—Other Industries With Shipments of Primary Products: 1982—Con.

[Million dollars. Table is a continuation of table 5c-1 and shows where products of industries in this chapter (referred to as primary products and listed in table 6a) are made. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column of table 5c-1. Specified "Other industries" are listed in this table if they account for more than $5 million of products primary to this chapter. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Other industries	Value	1982 product code	Other industries	Value
2899-	**CHEMICAL PREPARATIONS, N.E.C.**—Con.		2899-	**CHEMICAL PREPARATIONS, N.E.C.**—Con.	
	2087 Flavoring extracts and syrups, n.e.c.	(D)		2844 Toilet preparations	(D)
	2099 Food preparations, n.e.c.	5.4		2851 Paints and allied products	9.2
	2761 Manifold business forms	(D)		2861 Gum and wood chemicals	47.7
	2812 Alkalies and chlorine	(D)		2865 Cyclic crudes and intermediates	(D)
	2819 Industrial inorganic chemicals, n.e.c.	19.8		2869 Industrial organic chemicals, n.e.c.	205.7
				2873 Nitrogenous fertilizers	(D)
				2911 Petroleum refining	6.4
				2992 Lubricating oils and greases	26.9
	2821 Plastics materials and resins	13.7		3483 Ammunition, except for small arms, n.e.c.	(D)
	2833 Medicinals and botanicals	(D)		3541 Machine tools, metal cutting types	(D)
	2834 Pharmaceutical preparations	(D)		3623 Welding apparatus, electric	(D)
	2841 Soap and other detergents	101.2		3629 Electrical industrial apparatus, n.e.c.	(D)
	2842 Polishes and sanitation goods	58.7		3842 Surgical appliances and supplies	(D)
	2843 Surface active agents	34.5		3861 Photographic equipment and supplies	(D)

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	ADHESIVES AND SEALANTS						
2891- —	**Total**	(NA)	(X)	**2** 903.0	(NA)	(X)	1 873.1
28913 —	Natural base glues and adhesives	(NA)	(X)	177.5	(NA)	(X)	166.4
	Animal glues:						
28913 11	Hide (dry forms) mil lb	4	*23.0	15.7	7	49.0	21.2
28913 26	Flexible, nonwarp, and liquid glue (not glue stock) do	8	*23.3	13.0	13	**65.6	26.8
28913 50	Protein adhesives, including casein, blood, fish, soybean, albumen, etc. do	11	*52.6	25.2	(NA)	(S)	22.5
	Vegetable adhesives:						
28913 51	Dextrines do	22	**136.7	41.2	24	160.4	37.4
28913 55	Starches do	14	**81.7	30.1	15	**47.7	10.1
28913 80	Other natural base glues and adhesives made from natural gums, shellac, silicates, lacquers, oleoresinous varnishes, etc., except rubber, including bone, green and extracted (dry forms), bituminous adhesives, asphaltic, and coal tar do	16	**195.3	46.5	(NA)	**180.2	43.3
28913 00	Natural base glues and adhesives, n.s.k.	(NA)	(X)	5.7	(NA)	(X)	5.1
28914 —	Synthetic resin and rubber adhesives, including all types of bonding and laminating adhesives	(NA)	(X)	1 833.8	(NA)	(X)	1 221.8
28914 11	Epoxy adhesives mil lb	48	**79.3	111.7	42	*146.7	93.0
	Phenolics and derivatives adhesives:						
28914 23	Phenolics and modified phenolics do	18	697.4	154.6	16	*1 198.9	116.8
28914 25	Resorcinol and modified resorcinol do	3			4	(S)	12.8
28914 33	Urea and modified urea do	6	508.2	74.8	8	(S)	53.6
	Vinyl type adhesives:						
	Polyvinyl acetate:						
28914 41	Latex type do	58	**506.1	262.2	51	**439.3	156.5
28914 43	Solvent type do	16	68.4	49.6	16	*103.8	41.0
28914 45	Polyvinyl chloride and copolymers do	21	(S)	32.4	16	40.0	25.0
28914 47	Other vinyl polymer type adhesives do	20	*65.2	27.6	15	**138.0	50.9
28914 53	Acrylic adhesives do	28	145.8	96.3	21	*70.4	47.6
28914 54	Cyanoacrylate adhesives do	5	1.2	24.6	(NA)	(X)	[3]
28914 55	Polyester adhesives do	14	42.2	66.7	5	29.4	23.7
28914 65	Hot melt adhesives, including polyamide, polyolefin, and other hot melts do	32	**202.1	232.7	30	160.7	114.5
28914 71	Adhesive films, all types, including pressure sensitive structural and nonstructural adhesive films do	18	(S)	110.5	12	49.4	29.7
28914 48	Rubber and synthetic resin combinations do	41	**424.0	285.3	42	*524.5	216.4
	Rubber cement, for sale as such:						
28914 81	Latex type mil gal	26	(S)	65.7	26	104.0	53.6
28914 83	Solvent type do	41	*25.3	123.6	39	123.4	99.0
28914 89	Other synthetic resin and rubber adhesives, including cellulose, nitrocellulose, polyamide, anaerobic, etc.	37	(X)	61.4	(NA)	(X)	[3]87.7
28914 00	Synthetic resins and rubber adhesives, n.s.k.	(NA)	(X)	54.0	(NA)		
28915 —	Caulking compounds and sealants	(NA)	(X)	602.8	(NA)	(X)	364.4
	Natural base:						
28915 54	Caulks, modified and unmodified oil base mil lb	15	(S)	27.8	20	(S)	13.4
28915 55	Bituminous base (coal tar or asphalt) do	19	(S)	40.7	15	(S)	14.8
	Synthetic base:						
28915 56	General performance sealants (PVAC, butyl, vinyl, acrylic, neoprene, etc.) do	60	**323.6	200.3	45	(S)	59.0
	Special performance sealants:						
28915 61	Polysulfide do	10	*20.2	36.5	33	(S)	150.9
28915 63	Silicone do	11	[4]	[4]			
28915 65	Epoxy, urethane and others do	30	*89.6	*192.8			

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of $100,000 or more	Product shipments[1]		Number of companies with shipments of $100,000 or more	Product shipments[1]	
			Quantity[2]	Value (million dollars)		Quantity[2]	Value (million dollars)
	ADHESIVES AND SEALANTS—Con.						
28915 —	Caulking compounds and sealants —Con.						
	Synthetic base—Con.						
28915 67	Preformed tapes (butyl, polybutene, polyisobutylene etc.) ---- mil lb	17	**65.7	81.2	34	(S)	107.0
28915 00	Caulking compounds and sealants, n.s.k. ----	(NA)	(X)	23.4	(NA)	(X)	19.3
28910 00	Adhesives and sealants, n.s.k., typically for establishments with 5 employees or more (see note) ----	(NA)	(X)	179.5	(NA)	(X)	65.1
28910 02	Adhesives and sealants, n.s.k., typically for establishments with less than 5 employees (see note) ----	(NA)	(X)	109.4	(NA)	(X)	55.4

1982 product code	Product	1982				1977			
		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]	
				Quantity[2]	Value (million dollars)			Quantity[2]	Value (million dollars)
	EXPLOSIVES								
2892- —	**Total** ----	**(NA)**	**(X)**	**(X)**	**587.6**	**(NA)**	**(X)**	**(X)**	**435.5**
28920 —	Explosives, propellants, and blasting accessories, except those shipped by Government-owned, contractor-operated plants:								
	Industrial explosives:								
28920 13	Permissibles, including permissible slurries (approved by Bureau of Mines for underground coal mining) ---- mil lb	5	91.5	91.6	28.1	5	*31.8	*31.8	12.0
28920 15	Dynamites (nonpermissible) ---- do	7	(D)	(D)	(D)	7	164.9	164.9	59.0
28920 17	Ammonium nitrate, fuel sensitized, except slurry ---- do	12	990.7	795.1	71.3	12	*698.7	*683.0	56.5
	Water gel and slurries, except permissible slurries:								
28920 19	Cap sensitive ---- do	7	143.5	130.3	70.7	4	199.5	200.6	63.1
28920 21	Noncap sensitive ---- do	7	155.3	153.4	42.9	6	65.3	65.2	15.2
28920 27	Other industrial explosives, including black blasting powder, shaped charges, liquid oxygen explosives, nitroglycerin for sale as such, etc. ---- do	9	25.3	25.3	43.1	7	*51.0	*51.8	39.0
	Propellants:								
28920 35	Smokeless ---- do	3	(X)	18.6	73.3	4	(X)	22.2	52.5
28920 37	Other, including black powder propellants ---- do	2							
	Blasting accessories:								
28920 51	Electric blasting caps ---- mil units	9	(X)	36.9	64.9	(NA)	(X)	84.6	49.5
28920 53	Fuse products, such as safety fuse, detonating cord, etc. ----	7	(X)	(X)	(D)	(NA)	(X)	(X)	47.0
28920 55	Other blasting accessories (squibs, ignitors, detonating primers, fuse and other nonelectric blasting caps, n.e.c.) ----	10	(X)	(X)	37.7				
28920 71	Other explosives, including military detonators, jet starters, fuse and explosive assemblies, etc. ----	10	(X)	(X)	34.1	13	(X)	(X)	30.9
28920 00	Explosives, n.s.k., typically for establishments with 5 employees or more (see note) ----	(NA)	(X)	(X)	17.9	(NA)	(X)	(X)	14.8
28920 02	Explosives, n.s.k., typically for establishments with less than 5 employees (see note) ----	(NA)	(X)	(X)	5.5	(NA)	(X)	(X)	6.0
	PRINTING INK								
2893- —	**Total** ----	**(NA)**	**(X)**	**(X)**	**1 518.7**	**(NA)**	**(X)**	**(X)**	**904.0**
28931 —	Letterpress inks (black and color) ----	(NA)	(X)	(X)	128.0	(NA)	(X)	(X)	105.9
28931 05	News inks ---- mil lb	11	*198.8	*207.3	72.7	14	289.3	283.5	56.4
28931 06	Publication inks ---- do	11	*17.9	*16.6	14.3	9	17.4	16.9	10.9
28931 15	Packaging inks ---- do	13	*15.7	*15.8	26.1	27	21.4	21.4	23.7
28931 19	Other letterpress inks ---- do	13	**6.1	**5.4	11.5	11	4.1	4.2	7.9
28931 00	Letterpress inks, n.s.k. ----	(NA)	(X)	(X)	3.4	(NA)	(X)	(X)	7.0
28932 —	Lithographic and offset inks (black and color) ----	(NA)	(X)	(X)	536.4	(NA)	(X)	(X)	303.2
28932 31	News inks ---- mil lb	14	**170.5	**163.9	99.9	23	157.5	141.9	60.1
	Publication inks:								
28932 33	Web type ---- do	27	108.1	112.4	167.6	38	60.3	60.1	83.3
28932 34	Sheet types ---- do	19	16.0	12.1	39.9				
28932 35	Packaging inks ---- do	25	*21.2	*21.8	55.3	34	*30.9	*30.9	59.3
28932 38	Web commercial type ---- do	31	*37.1	*37.3	76.5	40	32.4	32.3	65.0
28932 45	Other lithographic and offset inks, including sheet commercial type ---- do	49	*27.4	*28.2	92.0				
28932 00	Lithographic and offset inks, n.s.k. ----	(NA)	(X)	(X)	5.1	(NA)	(X)	(X)	35.5
28933 —	Gravure inks ----	(NA)	(X)	(X)	325.8	(NA)	(X)	(X)	190.7
28933 43	Packaging inks ---- mil lb	18	*104.1	*106.4	118.3	16	81.6	76.7	79.5
28933 45	Publication inks ---- do	7	249.3	246.6	198.7	8	271.3	213.7	96.9
28933 49	Other gravure inks ---- do	11	**6.1	**6.4	8.5	6	13.5	14.5	11.7
28933 00	Gravure inks, n.s.k. ----	(NA)	(X)	(X)	.3	(NA)	(X)	(X)	2.6
28934 —	Flexographic inks ----	(NA)	(X)	(X)	241.7	(NA)	(X)	(X)	157.1
	Packaging inks:								
28934 82	Solvent types ---- mil lb	21	82.9	82.8	117.7	35	114.9	121.8	127.4
28934 83	Water types ---- do	29	*75.2	*76.6	87.2				
	Other flexographic inks:								
28934 85	Solvent types ---- do	9	**8.8	**8.6	12.9	9	23.5	24.8	27.3
28934 86	Water types ---- do	10	15.4	14.9	16.2				

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982				1977			
		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]	
				Quantity[2]	Value (million dollars)			Quantity[2]	Value (million dollars)
	PRINTING INK—Con.								
28934 —	Flexographic inks —Con.								
28934 00	Flexographic inks, n.s.k.	(NA)	(X)	(X)	7.7	(NA)	(X)	(X)	2.4
28935 —	Printing inks, n.e.c.	(NA)	(X)	(X)	143.8	(NA)	(X)	(X)	60.6
28935 71	Textile printing inks—mil lb	12	37.5	38.1	45.5	5	26.6	21.7	21.7
28935 85	Screen printing inks—do	17	14.7	14.9	46.5	10	*18.4	*18.6	20.3
28935 98	Other printing inks, including stencil inks—do	20	*39.5	*40.4	49.5	17	(S)	(S)	18.3
28935 00	Printing inks, n.e.c., n.s.k.	(NA)	(X)	(X)	2.3	(NA)	(X)	(X)	.3
28930 00	Printing inks, n.s.k., typically for establishments with 10 employees or more (see note)	(NA)	(X)	(X)	100.5	(NA)	(X)	(X)	65.9
28930 02	Printing inks, n.s.k., typically for establishments with less than 10 employees (see note)	(NA)	(X)	(X)	42.6	(NA)	(X)	(X)	20.6
	CARBON BLACK								
2895— —	**Total**	**(NA)**	**(X)**	**(X)**	**652.7**	**8**	**(X)**	**(X)**	**466.2**
28950 —	Carbon black (channel and furnace process only):								
28850 00	Carbon black (channel and furnace process only)—mil lb	8	2 420.8	2 392.7	652.7	8	3 571.2	3 565.0	466.2
28950 02	Carbon black (channel and furnace process only) n.s.k., typically for establishments with less than 5 employees (see note)	(NA)	(X)	(X)	–	–	(X)	(X)	–
	CHEMICAL PREPARATIONS, N.E.C.								
2899— —	**Total**	**(NA)**	**(X)**	**(X)**	**6 101.0**	**(NA)**	**(X)**	**(X)**	**4 243.8**
28991 —	Evaporated salt:								
28991 00	Evaporated salt (bulk, pressed blocks, and packaged)[5]—mil s tons	19	7.8	7.1	419.8	15	5.6	5.6	246.2
28992 —	Fatty acids (produced for sale as such)	(NA)	(X)	(X)	350.8	(NA)	(X)	(X)	353.2
	Saturated acids:								
28992 11	Stearic acid (40 to 50 percent stearic content)—mil lb	3	179.4	176.9	54.6	4	88.8	86.9	28.5
	Hydrogenated animal and vegetable acids:								
28992 23	Hydrogenated fatty acids having a maximum titer of 60° C and a minimum I.V. of 5—do	8	204.9	201.8	73.4	7	229.6	225.6	56.4
28992 25	Hydrogenated fatty acids having a minimum titer of 57° C and a maximum I.V. less than 5—do	5	143.9	129.3	42.1	5	146.9	147.4	52.4
28992 53	Coconut-type acids, I.V. 5 or more, including palm kernel and babassu, hydrogenate coconut acid—do	5	103.4	106.0	30.4	8	64.1	64.0	23.0
28992 55	Fractionated short-chain fatty acids, I.V. less than 5, such as caprylic, capric, lauric, and myristic—do	4	64.1	66.0	27.8	6	80.1	78.5	29.6
28992 57	Other saturated acids, including high palmitic (more than 60 percent palmitic, I.V. maximum 12) and hydrogenated fish and marine mammal fatty acids—do	2	(D)	(D)	(D)	3	9.2	9.4	3.2
	Unsaturated acids:								
28992 61	Oleic acid, including white oleic and red oil—do	4	(D)	(D)	(D)	6	81.3	76.3	28.9
28992 83	Other unsaturated fatty acids, including animal fatty acids other than oleic (I.V. 36 to 80), vegetable or marine (I.V. maximum 115), and other unsaturated fatty acids (I.V. 116 or more)—do	5	*76.2	*75.7	15.9	6	124.3	124.4	42.0
	Tall oil fatty acids:								
28992 92	Tall oil fatty acids containing less than 2 percent rosin acids and more than 95 percent fatty acids—do	6	255.1	232.8	37.5	9	272.5	252.4	58.3
28992 94	Tall oil fatty acids containing 2 percent or more rosin acids—do	6	163.1	141.3	23.1	5	138.7	135.6	28.8
28992 00	Fatty acids, n.s.k.	(NA)	(X)	(X)	5.9	(NA)	(X)	(X)	2.1
28994 —	Gelatin, except ready-to-eat desserts	(NA)	(X)	(X)	242.3	(NA)	(X)	(X)	175.3
28994 11	Food grade, excluding pharmaceutical and photographic—mil lb	7	29.7	29.5	60.8	9	32.0	32.5	63.8
28994 31	Pharmaceutical grade, except unfilled capsules—do	4	(S)	(S)	35.3	8	(S)	(S)	30.4
28994 97	Other gelatin products, excluding ready-to-eat desserts, including unfilled capsules, gelatin sheets for theatrical use, and photographic grade and technical (inedible) grade gelatin—do	6	14.8	15.3	139.0	(NA)	(S)	(S)	80.3
28994 00	Gelatin, except ready-to-eat desserts, n.s.k.	(NA)	(X)	(X)	7.2	(NA)	(X)	(X)	.8
28995 —	Essential oils, fireworks and pyrotechnics, sizes, and chemical preparations, n.e.c.	(NA)	(X)	(X)	4 437.4	(NA)	(X)	(X)	3 109.0
	Essential oils, unblended (natural):								
	Citrus oils:								
28995 11	Orange—mil lb	6	40.3	40.3	14.5	8	**66.2	**66.2	21.6
28995 12	Lemon—do	6	**5.2	**5.2	34.1	3	(D)	(D)	(6)
28995 14	Spearmint oil—do	3	1.5	1.3	16.2	3	1.8	1.5	21.3
28995 15	Peppermint oils derived from mentha piperita—do	4	3.8	3.2	35.5	4	3.3	2.7	43.4
28995 19	Other natural essential oils, including cedar wood, clove, and nutmeg oils—do	4	(S)	(S)	17.5	12	(S)	(S)	6 56.9
28995 29	Fireworks and pyrotechnics, including flares, jet fuel igniters, railroad torpedoes, toy pistol caps, etc.	24	(X)	(X)	95.4	18	(S)	(S)	45.2
	Chemical preparations, n.e.c.:								
28995 31	Rubber processing preparations, including red lead and 2-mercaptoimidazoline rubber accelerator composition—mil lb	3	(D)	(D)	(D)	6	r14.6	r14.4	r8.6
	Automotive chemicals:								
	Antifreeze preparations:								
28995 35	Permanent type—mil gal	21	146.0	145.4	381.4	25	r158.1	r143.5	r312.8
28995 36	Other—do	13	**11.3	**11.3	64.1	8	(S)	(S)	15.7
28995 37	Other automotive chemicals, including battery acid, de-icing fluid, carbon-remover solvents, etc.	65	(X)	(X)	201.2	58	(X)	(X)	122.2
28995 39	Concrete curing and floor hardening materials—mil lb	30	(S)	(S)	52.3	18	253.7	231.8	77.4
28995 41	Drilling mud materials, mud thinners, thickeners, and purifiers—do	25	**707.5	**705.2	340.6	15	*345.8	*349.5	123.2

See footnotes at end of table.

Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982				1977			
		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]		Number of companies with shipments of $100,000 or more	Quantity of production for all purposes	Product shipments[1]	
				Quantity[2]	Value (million dollars)			Quantity[2]	Value (million dollars)
	CHEMICAL PREPARATIONS, N.E.C.—Con.								
28995 —	Essential oils, fireworks and pyrotechnics, sizes, and chemical preparations, n.e.c. —Con.								
	Chemical preparations, n.e.c.—Con.								
28995 49	Foundry supplies, chemical (including binders, core oils, core wash, etc.)	18	(X)	(X)	133.0	24	(X)	(X)	153.5
28995 53	Household tints and dyes ---mil lb	4	(D)	(D)	[7]	7	*5.8	*5.6	11.6
28995 55	Insulation products (heat, electrical, other)	5	(X)	(X)	(D)	6	(X)	(X)	10.8
28995 59	Metal-treating compounds (nonoil base) for nitriding, pickling, drawing, and cutting	41	(X)	(X)	210.8	38	(X)	(X)	169.7
28995 61	Oil-treating compounds (nonoil base)	12	(X)	(X)	90.7	10	(X)	(X)	41.3
28995 68	Sizes, all types ---mil lb	13	*277.0	*277.2	88.6	6	488.3	511.8	113.3
28995 72	Inks (writing and stamp pad ink, including indelible ink and marking fluid, but excluding drawing inks) ---do	18	(S)	(S)	26.1	21	(S)	(S)	16.1
	Water treating compounds:								
28995 73	Swimming pool chemical preparations	22	(X)	(X)	169.6	20	(X)	(X)	77.1
28995 76	Cooling tower compounds ---mil lb	29	*165.7	*165.3	138.0	[8]	[8]	[8]	[8]
28995 77	Boiler compounds ---do	38	*263.3	*261.7	198.9	38	362.2	360.5	218.0
28995 78	Other water-treating compounds ---do	47	*524.1	*518.8	366.3	[8]28	[8]349.1	[8]352.2	[8]200.9
28995 81	Waterproofing compounds (electrical, leather, masonry, textile, etc.)	27	(X)	(X)	56.6	24	(X)	(X)	68.9
28995 87	Vitreous enamel (frit) ---mil lb	9	**108.3	**108.6	59.8	9	207.8	206.1	67.2
28995 91	Plating compounds ---do	21	(S)	(S)	292.2	21	(S)	(S)	219.8
28995 93	Lighter fluids (cigarette, charcoal, etc.) ---mil gal	9	*5.7	*5.7	25.5	9	(S)	(S)	26.4
28995 95	Waxes (animal, vegetable, mineral, including blends, but excluding pure petroleum waxes)	18	(X)	(X)	33.5	13	(X)	(X)	27.4
28995 97	Other industrial chemical specialties, including fluxes, plastics wood preparations, and embalming chemicals	185	(X)	(X)	[7]1 084.1	(NA)	(X)	(X)	[6]690.9
28995 00	Essential oils, fireworks, and pyrotechnics, sizes, and chemical preparations, n.e.c. n.s.k.	(NA)	(X)	(X)	181.5	(NA)	(X)	(X)	147.8
28990 00	Chemical preparations, n.e.c., typically for establishments with 5 employees or more (see note)	(NA)	(X)	(X)	489.4	(NA)	(X)	(X)	239.9
28990 02	Chemical preparations, n.e.c., typically for establishments with less than 5 employees (see note)	(NA)	(X)	(X)	161.3	(NA)	(X)	(X)	120.2

Note: In 1982 Census of Manufactures, data for establishments of small single-unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoff used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1982 and 1977 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

[1]Data reported by all producers, not just those with shipments of $100,000 or more.
[2]For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).
[3]For 1977, product code 28914 54 was combined with product code 28914 00.
[4]For 1982, data for product code 28915 63 is included with product code 28915 65.
[5]Data include evaporated salt shipped by establishments classified in mineral industries. For annual information on evaporated salt, rock salt, and salt in brine, see U.S. Bureau of Mines "Mineral Yearbook."
[6]For 1977, product code 28995 12 was combined with product code 28995 19 to avoid disclosing data for individual companies.
[7]For 1982, product code 28995 53 is combined with product code 28995 97 to avoid disclosing data for individual companies.
[8]For 1977, product code 28995 76 was combined with product code 28995 78.

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than $2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments
28913, NATURAL BASE GLUES AND ADHESIVES		
United States	**177.5**	**166.4**
California	16.3	13.7
Georgia	3.7	5.3
Illinois	14.7	8.9
Massachusetts	7.4	7.2
Michigan	6.4	5.6
Missouri	4.0	4.5
New Jersey	21.6	19.3
New York	10.8	14.3
Ohio	6.3	12.4
Tennessee	2.2	2.0
Texas	6.1	15.3

Product class and geographic area	1982 value of product shipments	1977 value of product shipments
28914, SYNTHETIC RESIN AND RUBBER ADHESIVES		
United States	**1 833.8**	**1 221.8**
California	192.4	116.6
Connecticut	23.2	12.0
Florida	12.3	10.4
Georgia	94.4	54.0
Illinois	199.5	172.3
Indiana	29.9	12.5
Kentucky	22.0	(BB)
Louisiana	34.6	19.1
Maryland	30.0	13.9
Massachusetts	125.8	89.6
Michigan	94.8	67.0
Missouri	45.6	24.2

See footnotes at end of table.

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977—Con.

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than $2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments
28914, SYNTHETIC RESIN AND RUBBER ADHESIVES—Con.		
New Jersey	167.7	90.0
New York	103.4	75.7
Ohio	168.2	109.9
Oregon	41.4	56.8
Pennsylvania	88.1	67.1
Rhode Island	4.7	(BB)
Tennessee	42.3	20.7
Texas	73.1	23.1
Virginia	8.6	8.6
Washington	23.2	17.9
Wisconsin	46.8	27.2
28915, CAULKING COMPOUNDS AND SEALANTS		
United States	**602.8**	**364.4**
California	37.8	35.9
Florida	3.7	2.8
Georgia	9.6	13.2
Illinois	63.7	14.9
Indiana	19.1	5.0
Massachusetts	8.1	1.6
Michigan	45.9	19.7
Minnesota	3.6	(AA)
Missouri	25.4	28.1
New Jersey	53.6	30.0
Ohio	90.9	66.6
Pennsylvania	25.6	15.3
Tennessee	2.3	(AA)
Texas	34.2	17.8
28931, LETTERPRESS INKS (BLACK AND COLOR)		
United States	**128.0**	**105.9**
California	10.3	9.0
Illinois	11.1	17.6
Michigan	11.4	3.9
Missouri	5.4	2.8
New Jersey	17.6	11.9
New York	7.5	7.6
Ohio	12.4	13.0
Texas	16.5	(EE)
28932, LITHOGRAPHIC AND OFFSET INKS (BLACK AND COLOR)		
United States	**536.4**	**303.2**
California	57.8	31.5
Florida	8.9	3.9
Georgia	11.6	6.7
Illinois	78.1	51.4
Indiana	24.3	8.9
Maryland	2.9	2.9
Massachusetts	10.9	5.3
Michigan	17.9	6.8
Minnesota	31.4	20.9
Missouri	24.5	10.1
New Jersey	58.7	37.3
New York	37.2	21.9
North Carolina	3.9	2.2
Ohio	53.1	34.4
Pennsylvania	11.0	9.7
Tennessee	12.5	4.1
Texas	23.4	7.6
Washington	5.3	2.2
Wisconsin	17.1	6.5
28933, GRAVURE INKS		
United States	**325.8**	**190.7**
Georgia	4.0	3.5
Illinois	105.4	72.3
Massachusetts	2.4	1.9
Missouri	4.4	3.5
New Jersey	30.2	21.9
North Carolina	19.8	9.1
Ohio	11.5	13.6
Pennsylvania	10.2	8.7
Tennessee	8.2	5.2
Virginia	32.5	8.4
28934, FLEXOGRAPHIC INKS		
United States	**241.7**	**157.1**
California	14.4	12.2
Georgia	13.7	11.5
Illinois	37.0	28.0
Maryland	2.9	3.9
Massachusetts	4.0	1.8
Minnesota	2.3	1.4
Missouri	12.4	8.3
New Jersey	52.0	27.9
New York	4.7	1.9
North Carolina	7.1	2.3
Ohio	19.7	12.5
Oregon	7.9	5.4
Pennsylvania	18.1	9.4
Tennessee	4.2	2.0
Texas	10.0	6.1
Wisconsin	3.9	5.1
28935, PRINTING INKS, N.E.C.		
United States	**143.8**	**60.6**
Georgia	10.0	1.0
Illinois	37.8	3.6
Michigan	3.1	(AA)
Missouri	2.6	6.2
New Jersey	38.9	22.1
North Carolina	15.9	(EE)
Ohio	7.3	(AA)
Pennsylvania	2.3	2.2
28991, SALT		
United States	**419.8**	**246.2**
Kansas	64.1	37.5
Michigan	89.4	57.3
New York	57.1	36.5
Utah	23.7	9.6
28992, FATTY ACIDS (PRODUCED FOR SALE AS SUCH)		
United States	**350.8**	**353.2**
Illinois	36.0	(FF)
Louisiana	13.8	24.5
Ohio	80.4	87.2
Texas	38.5	(EE)
28994, GELATIN, EXCEPT READY-TO-EAT DESSERTS		
United States	**242.3**	**175.3**
Illinois	15.6	13.7
28995, ESSENTIAL OILS, FIREWORKS, AND CHEMICAL PREPARATIONS, N.E.C.		
United States	**4 437.4**	**3 109.0**
Alabama	179.3	(GG)
Arizona	7.0	4.8
California	276.0	172.0
Connecticut	86.5	57.0
Florida	16.5	15.0
Georgia	171.1	100.5
Illinois	534.5	365.4
Indiana	34.4	64.8
Iowa	2.8	20.4
Kansas	86.1	24.8
Louisiana	198.4	149.0
Maryland	24.1	32.3
Massachusetts	83.5	(GG)
Michigan	221.2	203.6
Minnesota	106.3	(GG)
Mississippi	2.1	7.5
Missouri	58.3	85.7
New Jersey	406.2	245.0
New York	293.7	190.1
North Carolina	82.4	34.2
Ohio	378.9	276.6
Oklahoma	80.6	23.8
Oregon	18.3	(EE)
Pennsylvania	249.5	182.2
South Carolina	6.6	4.0
Tennessee	31.7	27.8
Texas	569.7	399.3
Utah	4.3	(AA)
Virginia	6.2	(FF)
Washington	19.2	30.6
Wisconsin	90.5	54.3

Note: For 1977, the following value ranges (in million dollars) substitute for actual figures withheld to avoid disclosing data for individual companies: AA—less than $2.0 but not 0; BB—$2.0 to $4.9; CC—$5.0 to $9.9; EE—$10.0 to $19.9; FF—$20.0 to $49.9; GG—$50.0 or more.

Table 6c. Product Classes—Value Shipped by All Producers: 1982 and Earlier Years

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Product class	1982	1981[1]	1980[1]	1979[1]	1978[1]	1977	1972	1967
2891-28913	**Adhesives and sealants**	**2 903.0**	**2 745.0**	**2 425.8**	**2 366.3**	**2 075.2**	**1 873.1**	**954.3**	**547.7**
28913	Natural base glues and adhesives	177.5	262.6	245.7	233.5	200.9	166.4	119.5	98.4
28914	Synthetic resin and rubber adhesives	1 833.8	1 666.9	1 545.0	1 505.9	1 366.9	1 221.8	671.8	356.6
28915	Caulking compounds and sealants	602.8	635.1	568.0	496.8	411.3	364.4	121.2	68.3
28910	Adhesives and sealants, n.s.k.	288.9	(S)	67.1	(S)	(S)	120.5	41.7	24.4
28920	**Explosives**	**587.6**	**658.8**	**654.9**	**591.6**	**456.4**	**435.5**	**237.6**	**248.5**
2893-	**Printing ink**	**1 518.7**	**1 376.3**	**1 235.4**	**1 099.7**	**990.0**	**904.0**	**498.0**	**342.6**
28931	Letterpress inks (black and color)	128.0	148.5	131.3	122.2	131.0	105.9	109.8	
28932	Lithographic and offset inks (black and color)	536.4	495.4	449.1	400.7	336.3	303.2	151.8	
28933	Gravure inks	325.8	307.8	272.1	226.3	181.4	190.7	82.5	342.6
28934	Flexographic inks	241.7	229.8	215.4	197.4	194.9	157.1	73.4	
28935	Printing inks, n.e.c.	143.8	136.3	118.0	102.5	72.8	60.6	35.2	
28930	Printing ink, n.s.k.	143.1	58.5	49.5	50.7	73.8	86.5	45.4	
28950	**Carbon black (channel and furnace process only)**	**652.7**	**728.4**	**504.7**	**551.0**	**487.9**	**466.2**	**227.1**	**167.8**
2899-	**Chemical preparations, n.e.c.**	**6 101.0**	**6 142.5**	**5 695.9**	**5 156.6**	**4 927.2**	**4 243.8**	**2 228.3**	**1 559.6**
28991	Salt	419.8	366.5	331.0	298.2	273.6	246.2	133.9	111.6
28992	Fatty acids (produced for sale as such)	350.8	386.0	448.8	457.2	412.8	353.2	155.3	111.1
28994	Gelatin, except ready-to-eat desserts	242.3	152.7	156.2	161.2	155.7	175.3	68.2	66.2
28995	Essential oils, fireworks, and chemical preparations, n.e.c.	4 437.4	4 804.0	4 336.5	3 976.7	3 580.6	3 109.0	1 641.0	1 146.1
28990	Chemical preparations, n.e.c., n.s.k.	650.7	433.3	423.5	263.3	(S)	360.1	229.8	124.6

[1]Figures are estimates derived from a representative sample of manufacturing establishments canvassed in annual survey of manufactures and, therefore, may differ from results that would be obtained from a complete canvass of all manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures volumes for this period.

Table 7. Materials Consumed by Kind: 1982 and 1977

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982 Quantity[1]	1982 Delivered cost (million dollars)	1977 Quantity[1]	1977 Delivered cost (million dollars)
	INDUSTRY 2891, ADHESIVES AND SEALANTS				
	Materials, containers, and supplies	**(X)**	**1 562.9**	**(X)**	**967.2**
	Plastics resins purchased from other establishments:				
282133	Polyvinyl acetate — mil lb	**183.8	61.5	*242.0	56.3
282132	Styrene-butadiene resins — do	**29.0	19.5	*29.9	10.0
282142	Phenolic and other tar acid resins — do	*63.5	25.0	10.9	5.6
282143	Amino resins — do	(S)	1.4	**21.3	6.5
282106	All other plastics resins — do	**251.6	146.8	**197.2	74.2
282104	Plastics resins (produced and consumed in the same establishment) (quantity only) — do	653.2	(X)	39.5	(X)
282202	Synthetic rubber — do	**117.7	77.8	**145.0	61.2
286104	Wood rosin, turpentine, and other wood chemicals — do	**56.7	25.8	40.6	11.1
204605	Starch and dextrin — do	**106.7	29.0	**204.1	32.2
286010	Industrial organic chemicals, n.e.c., including synthetic organic	(X)	197.5	(X)	147.0
281000	Industrial inorganic chemicals	(X)	88.5	(X)	[3]
291102	Refined petroleum products, including mineral oil, naphtha solvents, petroleum, waxes, etc.	(X)	119.6	(X)	[3]
140010	Nonmetallic minerals and earths, ground or otherwise treated, used as extenders and fillers (calcium carbonate, talc, silica, kaolin, mica, barite, soapstone, clay, and other clay minerals)	(X)	36.9	(X)	21.5
	Containers:				
3079C1	Plastics	23.7	24.7	(X)	10.0
340001	Metal	(X)	54.2	(X)	42.0
260091	Paper and paperboard containers, including shipping sacks	(X)	34.6	(X)	18.6
970099	All other materials and components, parts, containers, and supplies	(X)	425.2	(X)	[3]218.4
971000	Materials, containers, and supplies, n.s.k.[2]	(X)	194.9	(X)	[r]252.6

1982 material code	Material	1982 Consumption of materials received from other establishments: Quantity[1]	1982 Consumption of materials received from other establishments: Delivered cost (million dollars)	1982 Materials made and consumed in same plant (quantity)	1977 Consumption of materials received from other establishments: Quantity[1]	1977 Consumption of materials received from other establishments: Delivered cost (million dollars)	1977 Materials made and consumed in same plant (quantity)
	INDUSTRY 2892, EXPLOSIVES						
	Materials, containers, and supplies[4]	**(X)**	**255.8**	**(X)**	**(X)**	**210.3**	**(X)**
287312	Ammonia, synthetic anhydrous (basis--100% NH_3) — 1,000 s tons	123.5	14.6	(D)	(D)	(D)	(D)
287314	Ammonium nitrate (basis--100% NH_4NO_3) — do	322.8	53.6	(D)	*298.9	31.8	185.3
287311	Nitric acid (basis--100% HNO_3) — do	**16.3	1.9	164.7	24.8	3.4	337.8
281931	Sulfuric acid, except spent acid (basis--100% H_2SO_4)	(S)	1.2	(X)	47.1	1.3	8.7
	Petroleum liquids:						
131115	Crude oil — 1,000 barrels (42 gal)	(D)	(D)	(X)	**90.2	1.5	(X)
291001	Other petroleum liquids — do	*98.8	3.7	(X)			

See footnotes at end of table.

Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982			1977		
		Consumption of materials received from other establishments		Materials made and consumed in same plant (quantity)	Consumption of materials received from other establishments		Materials made and consumed in same plant (quantity)
		Quantity[1]	Delivered cost (million dollars)		Quantity[1]	Delivered cost (million dollars)	
	INDUSTRY 2892, EXPLOSIVES—Con.						
131152	Natural gas used as a raw material ---- bil cu ft	(D)	(D)	(X)	(D)	(D)	(X)
335105	Copper and copper-base alloy mill shapes (rod, bar, and sheet, etc.) ---- mil lb	6.7	5.6	(X)	7.0	5.7	(X)
289215	Water gel and slurry sensitizers, including powdered aluminum and hexamine ----	(X)	14.8	(X)	(X)	7.2	(X)
289216	High explosives, including petn, TNT, azides, and fulminates ----	(X)	16.5	(X)	(X)	16.2	(X)
3079C1	Plastics containers ----	–	2.3	–	(X)	5.0	(X)
260091	Paper and paperboard containers, including shipping sacks and other paper packaging supplies ----	(X)	9.2	(X)	(X)	10.1	(X)
970099	All other materials and components, parts, containers, and supplies ----	(X)	108.1	(X)	(X)	r101.8	(X)
971000	Materials, containers, and supplies, n.s.k.[2] ----	(X)	13.0	(X)	(X)	8.8	(X)

1982 material code	Material	1982		1977	
		Quantity[1]	Delivered cost (million dollars)	Quantity[1]	Delivered cost (million dollars)
	INDUSTRY 2893, PRINTING INK				
	Materials, containers, and supplies ----	**(X)**	**966.1**	**(X)**	**541.6**
280023	Organic and inorganic pigments ---- mil lb	*158.0	319.2	139.8	170.9
289501	Carbon black ---- do	*90.9	31.8	67.7	16.1
282104	Plastic resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding rods, tubes, and shapes ---- do	105.3	92.9	91.3	47.1
285101	Paints, varnishes, lacquers, shellacs, japans, enamels, and allied products ---- do	(S)	115.2	124.4	53.2
286104	Wood rosin, turpentine, and other wood chemicals ---- do	*40.4	26.3	30.3	7.6
290010	Hydrocarbon oils and solvents ---- mil gal	*94.7	97.2	83.8	58.0
286905	Oxygenated solvents ---- do	(S)	27.5	17.1	14.6
340001	Metal containers ----	(X)	22.2	(X)	12.0
970099	All other materials and components, parts, containers, and supplies ----	(X)	125.3	(X)	92.9
971000	Materials, containers, and supplies, n.s.k.[2] ----	(X)	108.5	(X)	69.2
	INDUSTRY 2895, CARBON BLACK				
	Materials, containers, and supplies ----	**(X)**	**370.5**	**(X)**	**250.9**
	Petroleum liquids:				
291184	Carbon black feedstock ---- mil barrels (42 gal)	10.9	280.8	15.6	188.9
131115	Crude oil ---- do				
291001	Other petroleum liquids ---- do				
131152	Natural gas used as a raw material ---- bil cu ft	12.3	43.4	25.2	30.2
260091	Paper and paperboard containers, including shipping sacks and other paper packaging supplies ----	(X)	3.7	(X)	4.7
970099	All other materials and components, parts, containers, and supplies consumed ----	(X)	42.6	(X)	26.1
971000	Materials, containers, and supplies, n.s.k.[2] ----	(X)	–	(X)	1.0

See footnotes at end of table.

Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity[1]	Delivered cost (million dollars)	Quantity[1]	Delivered cost (million dollars)
	INDUSTRY 2899, CHEMICAL PREPARATIONS, N.E.C.				
	Materials, containers, and supplies	(X)	3 007.4	(X)	1 875.6
140107	Crude nonmetallic minerals, including limestone, clay, gypsum, talc, etc., but excluding crude chemicals and nonmetallic minerals	(X)	85.0		
201109	Glue stock and killing floor offal, scrap, and bones	(X)	([5])		
207020	Fats, oils, greases, and tallow (animal, including lanolin; marine; vegetable, including carnuba and other vegetable waxes)	(X)	96.7		
289921	Fatty acids, mil lb	*52.0	15.5		
281201	Alkalies and chlorine	(X)	85.3		
281600	Inorganic pigments, mil lb	(S)	13.9		
281900	Industrial inorganic chemicals, acids, sodium compounds, anhydrous ammonia, etc., except medicinals	(X)	303.0		
286101	Wood rosin, turpentine, and other wood chemicals, including tall oil, mil lb	(S)	47.7	([6])	([6])
286020	Synthetic organic chemicals, not elsewhere classified, do	**584.4	263.5		
290001	Refined petroleum products, including naphtha solvents, petrolatum, waxes, etc.	(X)	199.3		
282103	Plastics and resin materials (synthetic), mil lb	(S)	134.8		
260003	Paper and paperboard products, except paperboard boxes, containers, and corrugated paperboard, 1,000 s tons	**33.4	18.0		
	Containers:				
265001	Paperboard boxes, containers, and corrugated paperboard	(X)	88.2		
340101	Metal, except collapsible tubes	(X)	65.4		
970099	All other materials and components, parts, containers, and supplies	(X)	[5]743.7		
971000	Materials, containers, and supplies, n.s.k.[2]	(X)	847.4		

[1]For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[2]Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

[3]For 1977, material codes 281000 and 291102 were included with material code 970099.

[4]Total cost of materials purchased and consumed by privately owned and operated plants only; excludes data on materials purchased and consumed by Government owned, contractor-operated plants.

[5]For 1982, material code 201109 was combined with material code 970099 to avoid disclosing data for individual companies.

[6]Materials consumed detail not collected for 1977.

APPENDIX A.
Explanation of Terms

This appendix is in two sections. Section 1 includes items which were requested of all establishments that were mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) that were not included on the report forms but were derived from information collected on the forms. Section 2 covers supplementary items that were requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in tables 3c and 3d of this report.

SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

Number of establishments and companies—As discussed in the Introduction, a separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operates at different physical locations, even if the individual locations are producing the same line of goods, a separate report was requested for each location. If the company operates in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on the number of custodial employees, capital expenditures, inventories, or any shipments from inventories during the portion of the year the plant was in operation.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction to Part 1 of the General Summary subject report.

Employment and related items—The regular report forms requested separate information on production workers as of a payroll period for each quarter of the year and on other employees as of the payroll period which included the 12th of March.

All employees—This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period ending nearest the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production workers—This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All other employees—This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office function, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment who are engaged in the construction of major additions or alterations to the plant and who are utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls was also requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multiestablishment companies. However, these figures are not included in the totals for individual industries shown in this report. They are included in the general summary and geographic area reports and in the final bound volumes as a separate category.

Payrolls—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1982. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers

of corporations, but excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payroll of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' Social Security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

Production-worker hours—This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

Cost of materials—This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (1) all raw materials, semifinished goods, parts, components, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year, (2) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

Specific materials consumed—In addition to the total cost of materials, which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Information on the specific materials consumed is shown in table 7 if appropriate to the industry. Establishments consuming less than a specified amount (usually $10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the Introduction for the importance of administrative records in the industry.)

Value of shipments—This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further processing. Included are all items made by or for the establishments from materials owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of "all other costs" (including company overhead) and profit. (See discussion of duplication of data below.)

Individual products—As in previous censuses, data were collected for almost all industries on the quantity and value of individual products shipped. In the 1982 census program, information was collected on the output of approximately 11,000 individual product items. The term "product," as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 items; whereas, "motor gasoline" was reported as a single item.

Approximately 6,000 of the product items were listed separately on the 1982 census report forms. Data for about 5,000 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1982 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a) together with the tieline total value collected in the census for reconciliation purposes.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1977 information is presented for most products.

Typically, both quantity and value of shipments information was collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers was also collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant was collected. Typically, the information on production was also collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

Classes of products—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the

individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1982 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

Duplication in cost of materials and value of shipments—The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication, since the products of some industries are used as materials by others. With some important exceptions, such as for motor vehicles and parts, this duplication is not significant at the four-digit industry level. However, it is significant at the two-digit and three-digit industry group level because these totals often include industries that represent successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the "Food" group and the addition of pulp mills to paper mills in the "Paper and Allied Products" group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the census of manufactures.

Value added by manufacture—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

Because of the change in instructions for reporting inventories for 1982, the 1982 figure for value added is not strictly comparable to prior-year data. This is explained more fully in the inventories section below.

"Value added" avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

New and used capital expenditures—For establishments in operation and establishments under construction but not yet in operation, manufacturers were asked to report their new expenditures for (1) permanent additions and major alterations to manufacturing establishments, and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

The totals for new expenditures exclude that portion of expenditures leased from nonmanufacturing concerns, new facilities owned by the Federal Government but operated under contract by private companies, and plant and equipment furnished to the manufacturer by communities and nonprofit organizations. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers were also requested to report the value of all used buildings and equipment purchased during the year at the purchase price. For any equipment or structure transferred to the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; i.e., it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form and is subject to sampling error (see table 3d). The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in both tables 3a and 3d. The figure in table 3a is a census universe total and may differ from the results of the ASM sample shown in table 3d. Since the figures in table 3d are subject to sampling error, they are not considered as reliable as the universe figures.

End-of-year inventories—Respondents were asked to report their 1981 and 1982 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown in footnote 4 of table 1a. However, the end-of-1981 figure shown in this footnote may differ from the corresponding value published as part of the 1981 Annual Survey of Manufactures.

This difference at the four-digit SIC level is due primarily to the effects of industry shifts. As described in the Industry Classification of Establishments section of the Introduction, ASM noncertainty plants are allowed to shift from one industry to another in a census year; whereas, they are "frozen" in a particular industry in ASM years. Other explanations for this difference include the effects of sampling and processing errors and revisions to end-of-1981 data reported by respondents.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by another establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw

materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for individual industries, industry groups, and "all manufacturing," which are aggregates of figures reported by establishments in specified industries.

Specialization and coverage ratios—These items are not collected on the report forms but are derived from the data shown in table 5b. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

As noted in the Introduction, an establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in tables 1a through 5a and data on product shipments shown in tables 6a through 6c.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

Supplemental labor costs—Supplemental labor costs are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records do not generally provide reliable figures on net employee benefits of these types.

Cost of purchased services—ASM establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, and communication services. Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment, such as painting, roof repairs, replacing parts, and overhauling equipment. Such payments made to other establishments of the same company and for repair and maintenance of any leased property are also included. Extensive repairs or reconstruction that were capitalized are considered capital expenditures for used buildings and machinery and are, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force are also excluded.

The response coverage ratio shown in table 3d for each of the three types of purchased services listed above is a measure of the extent to which respondents reported for each item. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight; see section 3) for those ASM establishments that reported the specific inquiry to the weighted total employment for all ASM establishments classified in the industry.

Electric energy used for heat and power—Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy and quantity of generated-less-sold electric energy were collected only on the ASM forms. The cost and quantity of purchased electric energy represent the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

Beginning- and end-of-year depreciable assets—The data encompass all fixed depreciable assets on the books of establishments at the beginning and at the end of the year. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets, including inventories and intangible assets, such as patent rights and royalties. Also excluded are land and depletable assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year, rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress. In addition, respondents were requested to make certain that assets at the beginning of the year plus new and used capital expenditures, less retirements, equalled assets at the end of the year.

New and used capital expenditures—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)

Breakdown of new capital expenditures for machinery and equipment—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement. Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

The "not specified by kind" or n.s.k. item for expenditures for new machinery and buildings, shown in table 3d, represents the total machinery and equipment expenditures for establishments that did not break down their expenditures for the three specific categories. This means that for most industries the specific categories are understated.

Retirements—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1982. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent was also requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

Rental payments—This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets, and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company, and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

Depreciation charges—This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

APPENDIX B.
Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies

DESCRIPTION OF SURVEY SAMPLE

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 55,000 manufacturing establishments selected from a total of about 225,000 establishments. These 225,000 establishments represent all manufacturing establishments of multiunit companies and all single-unit manufacturing establishments with five employees or more tabulated in the 1977 Census of Manufactures. This mail portion is supplemented by a Social Security Administration list of new manufacturing establishments opened after 1977. The individual establishments were defined as the sampling unit for this sample. This is a change from the previous ASM sample when companies were used as the sampling unit. The implication of this change is that the probability of selection of any establishment relates only to the size of the establishment itself and is independent of the size of the company with which the establishment is affiliated. The efficiencies associated with the change to an establishment sample have made it possible to reduce the mail sample panel from 70,000 establishments in 1978 to 55,000 establishments in the current panel.

The nonmail portion of the survey includes all single-unit establishments that were tabulated with less than five employees in the 1977 Census of Manufactures. Although this portion contained approximately 125,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of other Federal agencies. This administrative record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under special conditions, which safeguard the confidentiality of both tax and census records. Estimates for data for these small establishments were developed using industry averages in conjunction with the administrative information.

The corresponding estimates for the mail and nonmail establishments were added together, along with the adjusted base-year differences as defined in Description of Estimating Procedures below. The remaining description of the survey sample relates only to the mail portion of the ASM sample.

All establishments with 250 employees or more in the 1977 census were included in the survey panel with certainty. These establishments collectively account for approximately 65 percent of the total value of shipments for manufacturing establishments in the 1977 census. Smaller establishments were sampled with probabilities ranging from 1.000 down to 0.005 in accordance with mathematical theory for optimum allocation of a sample.

The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. For establishments included in the 1977 Census of Manufactures, the measure of size depended directly upon each establishment's 1977 product class values and the historic variability of the year-to-year shipments of each product class. Roughly equivalent measures of size were assigned to postcensus birth establishments based on their industry codes and anticipated payroll and employment.

The method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight to differences in employment, value added, and other general statistics, for these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of establishments into and out of a given sample panel without introducing a bias into the survey estimates.

DESCRIPTION OF ESTIMATING PROCEDURES

Most of the ASM estimates for the years 1978-1981 were computed using a modified "difference estimate" formula. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1977 census published number for an item total and the linear ASM estimate of the total for 1977. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

This base-year difference was then adjusted to reflect the estimated growth at the four-digit or, in the case of product classes, five-digit based Standard Industrial Classification (SIC) level from 1977 to the year of the survey; for example, 1981. It should be noted that due to processing constraints, the growth factors lagged one year; i.e., if 1981 is the survey year, they were not based on the estimated growth from 1977 to 1981 but rather the growth from 1977 to 1980. This one-year lag had negligible effect on the estimates, particularly at the total manufacturing level where the adjusted base-year difference accounted for less than 1 percent of the estimate for total value of shipments.

These adjusted base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1978-1981. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.

The 1982 sample data included in table 3d were also developed using difference estimates. However, since the universe totals for the census year (1977 or 1982) were not known, a modification of the procedure described above was necessary. For each item in table 3d, except purchased services and breakdown of expenditures for new machinery and equipment (see further description in appendix A, section 2), linear

estimates of the publication totals from the ASM mail sample were adjusted by the difference between imputed census totals and the corresponding ASM mail sample estimates of these imputed totals. These imputed totals are obtained by applying industry average ratios to control item values at the establishment level. For example, an imputed total beginning assets figure is obtained by multiplying each establishment's total value of shipments by the industry (four-digit SIC) average for the ratio of beginning assets to shipments.

Separate estimates for the nonmail establishments were not developed. However, their contribution to the publication estimates is reflected in the difference adjustment.

The method of inventory valuation percentages included in table 3c was developed using both complete census information and ASM estimates. The percentages for the four major categories (LIFO, non-LIFO, valuation method not reported, and LIFO reported without associated value and reserve) were derived from the complete census and correspond to the values included in table 3d. The percentages for the specific non-LIFO methods of valuations (FIFO, average cost, specific costs, etc.) are ratio estimates developed from the ASM in conjunction with the census universe estimate for the total of the non-LIFO methods.

QUALIFICATIONS OF THE DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sampled lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the differences between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of the estimates.

The particular sample selected for the ASM is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. Except for table 3c, they are presented in the form of relative standard errors, the standard errors divided by the estimated values to which they refer. In table 3c, "absolute" standard errors of the estimates are presented.

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
2. From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown as 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total and about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors would also occur if a complete canvass were to be conducted under the same conditions as the survey.

Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions, and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.

TEAR HERE

REFERENCE MATERIALS • ORDER FORMS • PUBLICATION CORRECTIONS

Please send me the items marked (X) below.

☐ Corrections (if there are any) for this publication— **Manufactures, Miscellaneous Chemical Products, MC82-I-28H**

If you purchase several different reports from the 1982 Economic Censuses, you should complete this form from each of the reports and return it to the address shown below to receive publication corrections. However, you should complete the following on **only** one of the forms.

☐ Guide to the 1982 Economic Censuses and Related Statistics

☐ Monthly Product Announcement—A monthly notice of all products released by the Census Bureau during the previous month—useful primarily to persons who plan to purchase publications, tapes, etc., in the future.

Publication announcements and order forms — *Mark (X) subjects in which you are interested.*

☐ Retail Trade
☐ Wholesale Trade
☐ Service Industries
☐ Construction Industries
☐ Manufacturing
☐ Mineral Industries
☐ Transportation
☐ Economic Censuses of Outlying Areas (Puerto Rico, Guam, Virgin Islands, and Northern Mariana Islands)
☐ Enterprise Statistics
☐ Minority- and Women-Owned Businesses
☐ Agriculture
☐ County Business Patterns
☐ Quarterly Financial Report
☐ Governments
☐ Foreign Trade
☐ Population
☐ Housing
☐ International Statistics
☐ Geography
☐ Guides, Catalogs, etc.

Name		
Organization		
Address/PO Box		
City	State	ZIP Code

Mail completed form to

Customer Services
DUSD
Bureau of the Census
Washington, D.C. 20233

PUBLICATION PROGRAM

1982 CENSUS OF MANUFACTURES

Publications of the 1982 Census of Manufactures, containing preliminary and final data on manufacturing establishments in the United States, are described below. Publication order forms for the specific reports may be obtained from any Department of Commerce district office or from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, D.C. 20233

Preliminary Reports

Preliminary industry data are issued in 443 separate reports covering 452 industries (or combinations of industries). Preliminary data for States are grouped and released in reports for each of the nine census geographic divisions.

Final Reports

Final detailed statistics are issued in separate paperbound reports.

Industry series—82 reports (MC82-I-20A to -39D)

Each of the 82 reports provides information for a group of related industries (e.g., "dairy products" includes industries for butter, cheese, milk, etc.). Final figures for the United States are shown for each of the 452 manufacturing industries on quantity and value of products shipped and materials consumed, cost of fuels and electric energy, capital expenditures, assets, rents, inventories, employment, payroll, payroll supplements, hours worked, value added by manufacture, number of establishments, and number of companies. Comparative statistics for earlier years are provided where available.

For each industry, data on value of shipments, value added by manufacture, capital expenditures, employment, and payroll are shown by employment-size class of establishment and degree of primary product specialization. Statistics are given on production of specific products and consumption of energy and various materials by industry.

Geographic area series—51 reports (MC82-A-1 to -51)

A separate report for each State and the District of Columbia presents data for industry groups and industries on value of shipments, cost of materials, value added by manufacture, employment, payroll, hours worked, new capital expenditures, and number of manufacturing establishments for the State, SMSA's, and large industrial counties and places. Comparative statistics for earlier census years are shown for the State and large SMSA's. Manufacturing totals are presented for each county and for places with significant manufacturing activity. Detailed statistics—including inventories, assets, rents, and energy costs—are presented only in statewide totals.

Subject series—10 reports (MC82-S-1 to -10)

Each of the 10 reports contains detailed statistics for an individual subject, such as: selected materials consumed, selected metalworking operations, manufacturing activity in government establishments, concentration ratios in manufacturing, type of organization, water use in manufacturing, fuels and electric energy consumed (separate publications for industry statistics, and State and SMSA statistics), textile machinery in place, production indexes, and a general National-level summary.

Final Report Volumes

Final paperbound reports subsequently are assembled and reissued in clothbound volumes.

- Volume I. Summary and Subject Statistics—data previously issued in series MC82-S.
- Volume II. Industry Statistics—data previously issued in series MC82-I.
  - Part 1. Major Groups 20 to 26
  - Part 2. Major Groups 27 to 34
  - Part 3. Major Groups 35 to 39
- Volume III. Geographic Area Statistics—data previously issued in series MC82-A.
  - Part 1. Alabama to Montana
  - Part 2. Nebraska to Wyoming

Microfiche

All published data also are available on microfiche.

Computer Tapes

Selected data—generally detailed information by industry and/or geographic area—also are available on public-use computer tapes. For the selected data, these tapes will provide the same information found in the final reports. Public-use computer tapes are available for users who wish to summarize, rearrange, or process large amounts of data. These tapes, with corresponding technical documentation, are sold by Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

OTHER ECONOMIC CENSUSES REPORTS

Data on retail trade, wholesale trade, service industries, construction industries, mineral industries, enterprise statistics, minority-owned businesses, women-owned businesses, and transportation also are issued as part of the 1982 Economic Censuses. A separate series of reports covers the censuses of outlying areas—Puerto Rico, Virgin Islands of the United States, Guam, and the Northern Mariana Islands. All published reports and microfiche are sold by the Superintendent of Documents, U. S. Government Printing Office. Appropriate announcements and order forms describing these products are available free of charge from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, D.C. 20233.

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Official Business
Penalty for Private Use, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-202

Special Fourth-Class
Rate—Book

1982 Census of Manufactures